HE
359
.A2U5

vol. 2-3, pt. 1

LIBRARY OF CONGRESS

THE LIBRARY OF CONGRESS

THE LIBRARY OF CONGRESS

Copy 2
Office of the Geographer
SEP 30 1943

710
gmbd
Copy 3

NOT FOR PUBLIC DISTRIBUTION

LATIN AMERICAN TRANSPORTATION SURVEY
HIGHWAYS SECTION

7
6
49
3
Copy

PART TWO

HIGHWAYS OF CENTRAL AMERICA

HONDURAS, NICARAGUA,
COSTA RICA and PANAMA

Prepared by
U. S. Department of Commerce
Bureau of Foreign and Domestic Commerce
for the
Board of Economic Warfare
March 1943

[illegible] (incomplete)

THE HIGHWAYS OF

Nicaragua

Prepared by ELISHA E. EARLY

and

Honduras, Costa Rica, and Panama

Prepared by Joseph L. Fitzmaurice

Under the Supervision of

B. P. ROOT

HE359
.A2U5

CONTENTS

Outline Map of Mexico, Central America and Panama 1

HONDURAS

The Republic of Honduras.. 2
    Geography and Climate.. 2
    Government... 3
    Population... 4
    Production and Industry.. 4
    Imports and Exports.. 4
    Minerals... 5
    Conclusion... 5
Highways of Honduras.. 7
    Main Highways.. 8
    Cities and Towns Touched....................................... 9
    Bridges.. 9
    Motor Transportation... 10
    Highway v. Rail Shipping....................................... 11
    Pan American Highway... 11
    Planning and Financing... 13
    Materials and Equipment.. 16
Map: Highways of Honduras... 18

NICARAGUA

The Republic of Nicaragua... 19
    Geography and Climate.. 19
    Government... 20
    Population... 22
    Industry... 22
    Imports and Exports.. 24
    Conclusion... 24
Highways of Nicaragua... 25
    Road Mileage by Construction Types............................. 25
    Planning and Financing... 26
    Materials and Equipment.. 26
    Chances for American Participation............................. 26
    Pan American Highway... 27
    The Pioneer Road... 29
    Main Highways.. 30
    Bridges.. 32
    Culverts... 32
    Registration of Motor Vehicles................................. 33
Map: Highways of Nicaragua.. 35

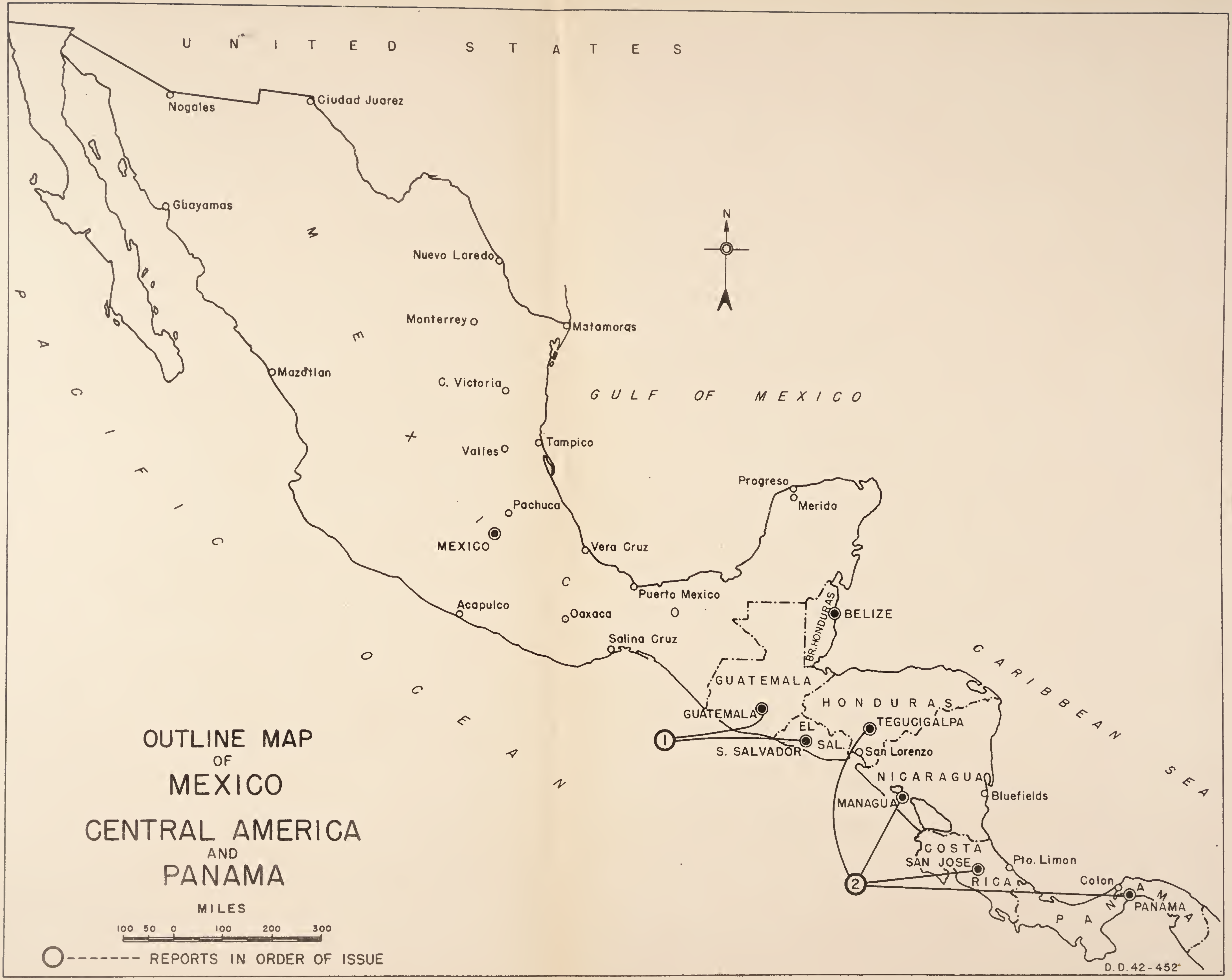
CONTENTS (CONTINUED)

COSTA RICA

The Republic of Costa Rica.. 36
    Geography and Climate.. 36
    Government.. 37
    Population.. 38
    Industry.. 39
    Imports and Exports.. 40
    Conclusion.. 40
Highways of Costa Rica.. 41
    Main Highways.. 42
    Highways Useful to War Effort.. 44
    Bridges.. 46
    Projection of Road Work.. 47
    Legal Restrictions.. 49
    Highway v. Rail Shipping.. 50
    Pan American Highway.. 51
    Planning and Financing.. 53
    Materials and Equipment.. 56
    Registration of Motor Vehicles.. 58
Map: Highways of Costa Rica.. 59
    Highways of Panama and Canal Zone.. 60

PANAMA

The Republic of Panama.. 61
    Geography and Climate.. 61
    Government.. 62
    Population.. 62
    Industry.. 63
    Minerals.. 63
    Imports and Exports.. 63
    Conclusion.. 64
Highways of Panama Republic and Canal Zone.. 65
    Road Mileage by Construction Types.. 65
    Main Highways.. 66
    Canal Zone Roads.. 69
    Pan American Highway.. 70
    Planning and Financing.. 78
    Materials.. 79
    Machinery and Equipment.. 80
    Registration of Motor Vehicles.. 82
Map: Highways of Panama.. 83



OUTLINE MAP
OF
MEXICO
CENTRAL AMERICA
AND
PANAMA

○------- REPORTS IN ORDER OF ISSUE

2-10582

THE REPUBLIC OF HONDURAS
(La Republica de Honduras)

Honduras, with an estimated 120,000 square kilometers (46,332 square miles), is the third largest republic in Central America. It is situated in the middle of Central America with most of its 708 kilometers (440 miles) of shoreline lying on the Caribbean Sea; the narrower part of the country is washed for 64 kilometers (40 miles) by the Gulf of Fonseca on the south. The neighboring countries are Guatemala on the west, Nicaragua on the southeast, and El Salvador on the southwest. The territory lies between 13° and 16°30' north latitude and 83° and 89°41' west longitude.

The monetary unit is the gold lempira (named after a native chief).

Beginning in 1932, a new currency based upon a standard unit of 1 lempira (equal to $0.50 United States currency) was put in circulation. Exchange has been selling at 2.04 lempiras to the dollar in New York. Silver, nickel, and copper coins are in circulation.

The capital, Tegucigalpa, lies on an interior plateau at about an altitude of 975 meters (3,200 feet). The unusual feature about the capital is that it is the only capital in Central America without a railroad. It had 47,223 inhabitants on June 30, 1940. Other towns (June 1934 census) are San Pedro Sula, 17,516; Choluteca, 13,624; Juticalpa, 11,593; Nacaome, 11,260; Santa Rosa, 10,513; and Comayagua, 10,342. The important ports are Amapala on the Pacific and La Ceiba, Trujillo, Tela, and Puerto Cortez on the Atlantic. Four main railroads operate in the Republic, which serve mainly to connect the ports on the north coast with banana, sugar, coffee, and coconut plantations in the interior. The railways have a total extension of 1,336 kilometers (830 miles), and rolling stock includes 79 locomotives, 57 passenger cars, 2,097 freight cars, and 52 miscellaneous cars.

GEOGRAPHY AND CLIMATE

Honduras is one of the most mountainous countries in Central America. The Central American cordillera (range) traverses it from northwest to southeast, sloping towards the Pacific Ocean for a distance varying between 80 and 95 kilometers (50 and 60 miles). The highest mountains are in the southern half, and they reach 3,048 meters (10,000 feet) in some places. The mountains are interspersed with valleys which are the sources of many rivers and streams. The most important river is the Ulua, its largest tributary being the Humuya. The Ulua rises in the Comayagua plains and flows into the Caribbean Sea.

The climate of Honduras has the same variations as the other Central American countries with high temperatures on the coasts and moderately lower temperature in the higher inland areas. Average temperature is about 74°F. with a minimum of 56° in December and the hottest about 90° in May. The rainy season begins in May and continues until the end of November. The central plateaus have a climate all their own being subject to neither heavy rains nor excessive drought.

GOVERNMENT

The first constitution of Honduras was promulgated December 11, 1825. This original constitution had many amendments, the last being in October 1894. In September 1904, a new constitution was adopted, but a few years later this was replaced by the original constitution that had been amended in October 1894. Another constitution was promulgated on September 10, 1924, which became effective on October 3, of the same year. A new constitution went into effect on April 15, 1936, revising and amending the form of the 1924 constitution. This constitution is in force at the present time. Amendments to the Constitution to be effective must be approved by a two-thirds majority of the members of Congress at two successive sessions before they become law.

The legislative power is exercised by a single chamber called the Congress of Deputies. Members are elected for a term of six years, without limitation on reelection. They must be in full possession of all their legal rights, 25 years of age, native born, and residents of the district from which elected. One deputy is elected for each 25,000 persons or fraction thereof over 12,500.

The executive power is exercised by the President and in the event of his death or incapacity the authority vests in the Vice President who is elected at the same time. These two officials are elected by popular and direct vote. A majority vote is required to elect, so in case no candidate receives a majority at the popular election, the Congress of Deputies chooses between the two candidates for each office who has received the highest number of votes at the popular election. The presidential term of office is six years, beginning January 1 following the election. Neither the President nor the Vice President may be elected in immediate succession, nor any relative of either within the fourth degree of consanguinity or second of affinity. The President's cabinet is composed of from 4 to 7 ministers, the number of which is left to the discretion of the President. They are chosen by the president to head the various departments, but since the number of departments exceeds the number of ministers allowed by the constitution, a minister may head two or more departments. The customary departments are in use: Relaciones Exterior (Foreign Affairs), Educacion Publica (Public Education). Justicia (Justice), Gobernacion (Interior), Fomento (Development), Agricultura y Comercio (Agriculture and Commerce), Trabajo (Labor), Hacienda (Treasury), Credito Publico (Public Credit), Guerra, Marina y Aviacion (War, Navy and Aviation), Sanidad (Health). Cabinet members may sit in the legislative hall and take part in the discussions and debate but they have no vote.

The judicial power is vested in a Supreme Court of Justice and the lower courts as established by law. The Supreme Court, which sits in the capital, Tegucigalpa, is composed of 5 magistrates elected by the National Congress for a six year term and may be reelected in succession. Three alternates are selected at the same time as the members of the Court. The Supreme Court names the Magistrates of the courts of appeal and the lower departmental and sectional judges. Justices of the peace are appointed by the sectional judges.

Foreigners entering the Republic have all the rights and duties of citizens.

Labor is the subject of regulation; an eight hour day and 6-day week are enforced. Employment of women and children in industry is strictly regulated. Responsibility of employers in industrial accidents is imposed and concerns are bound to provide hospitals for the care of those injured in employment.

A salient feature of the Honduran governmental system is the recognition of the family as the fundamental unit in society.

POPULATION

The population in 1940 consisted of 1,105,504 persons or 24.9 to the square mile. Most of the people live in the rural areas, since the cities are very small. Aboriginal Indians are estimated to number over 35,000 consisting principally of Mosquito, Zumo, Payas, and Xicaques tribes. The Spanish speaking people are chiefly Indian with an admixture of Spanish blood. In the north there is a large number of Negroes employed by the fruit producing companies, of which about 3,000 are British subjects; their further immigration is now prohibited.

PRODUCTION AND INDUSTRY

Agriculture is the chief occupational pursuit of the people. Agricultural activities consist of banana growing, coffee and tobacco cultivation, and cattle raising, with sugar cane, beans, corn, and other crops being raised for local consumption. Corn is first in importance in the diet of the people; comparatively little wheat is produced in the country. Although it is the most essential crop in Honduras, corn is frequently overlooked because it is not exported. Banana growing is of prime importance in international commerce. Banana plants grow wild in all parts of the country up to an elevation of 915 meters (3,000 feet) but cultivation of the fruit for export is confined to the rich, hot lands along the north coast, extending inland 80 to 100 kilometers. Henequen cultivation is one of the principal industries in southern Honduras. Better methods of tobacco cultivation have been introduced in recent years. Several schools are maintained where the cultivation and curing of tobacco are taught. An experimental rubber plantation was established through the cooperation of the United States and Honduras in 1940, when it is reported about 200,000 trees were planted. The coconut industry is of considerable consequence and the groves extend from the Ulua River to the Cuero River a distance of 97 kilometers (60 miles) and contain over 30,000 fruit bearing trees. Coffee of excellent quality is grown by small farmers. There is a good grade of Panama hat produced in the Department of Copan and Santa Barbara. Honduras has great potentialities as a cattle-raising region.

In the past the lack of land transportation has been a major difficulty which retarded the development of agriculture in the country. With the increased construction of motor highways now going forward rapidly, Honduras should produce a much greater variety and quantity of tropical goods and products in the future. The swift flowing mountain streams provide cheap potential power for the operation of manufacturing machinery. Despite many difficulties the sugar industry is of considerable domestic importance.

IMPORTS AND EXPORTS

Bananas, gold, and silver account for about 90 percent of the yearly total exports. The United States in the year ended June 30, 1940, took 96 percent of the exports of Honduras and furnished 63 percent of its imports. Table I illustrates the relative changes in imports and exports (in lempiras):

TABLE I

Imports and Exports of Honduras

Fiscal Year	Imports	Exports	Balance
1935-36	17,446,260	18,430,423	+ 984,163
1936-37	20,774,542	19,282,967	- 1,491,572
1937-38 1/	18,935,747	14,712,775	- 4,222,972
1938-39	19,406,654	19,734,312	+ 327,658
1939-40	20,170,138	19,314,588	- 855,550

1/ For 11 months only. Previously fiscal year ended July 31. Now ends on June 30.

In recent years noticeable changes have arisen on the import side. Imports from Germany in 1939-40 fell to about 60 percent of what they were in the previous period, while purchases from Japan more than doubled, making her the second largest supplier, accounting for 13.2 percent of total imports. Balance of trade figures are particularly important.

Due to lack of capital, manufacturing is still undeveloped. There are two large breweries in the country. A large match factory is located at Tegucigalpa. Other manufacturing enterprises include 18 factories for soft drinks, 10 for shoes, 8 for shirts, 7 for soap, 5 for trousers, 4 for candles, and 3 each for flour, underwear, cigars and cigarettes. The entire output of these concerns is significant in Honduras because other items such as tourist receipts, freight and insurance payments, and interest from foreign investments are negligible. The Government is alert to this condition and is making every effort to increase its export trade through diversification of the industries and products of the nation.

MINERALS

Honduras is a country rich in mineral wealth. The resources consist of gold, silver, copper, lead, zinc, iron, and antimony, some of which are found in every department. The natives pan gold from the rivers with primitive methods, the washing being done with a sieve. In spite of the crude methods in use, the women engaged in the industry pan between 150,000 and 200,000 lempiras of gold annually. In 1940, total production of gold amounted to 26,925 fine ounces; of silver, 4,090,222 fine ounces.

CONCLUSION

Highway transportation in the past has not been an important factor in Honduras. The principal cause of the retardation of road construction has been the heavy damage caused by rains each year in the rainy season. Every year a large amount of the work has consisted in removing landslides and repairing other damage caused by heavy rains to existing highways. The present difficulty is lack of funds for highway development.

Business conditions in Honduras are greatly dependent on her foreign trade. The tight shipping condition together with the curtailment of internal transportation brought about by shortages of tires and gasoline has caused economic activity to reach new low levels. The central and southern parts of Honduras have been particularly hard hit because gasoline propelled vehicles are the only means of overland transportation and the railroad does not serve these areas. Unemployment is increasing, although it is hoped that some of the unemployed workers will be absorbed on public works projects, such as the work on the Inter-American highway. The export of strategic materials to the United States up to now has been hampered by high production costs in relation to sales prices, and the shortage of shipping. If this activity can be properly developed it promises to relieve somewhat the depressed economic condition.

The Tela Railroad Company had intentions of planting 1,620 hectares (4,000 acres) of abaca at the end of the rainy season (October 1942), and they have already imported 600 mules from Mexico for the necessary soil preparation and cultivation. Rubber is dribbling in to the collection centers, but the price offered is too low to encourage tappers to go deeper into the woods to bring out large quantities. The Standard Fruit Company collected 6,000 pounds during September and first part of October of last year. The copra industry is picking up again despite a drop in price from a high of $105 per short ton to the present price of $70 per short ton. In September 1942, the Standard Fruit and Steamship Company exported 187,984 short tons of copra to the Commodity Credit Corporation. The present attitude of the Standard Company is that the formalities involved in copra shipments leave little incentive for continuing their operations. Lack of jute sacks is also limiting the export of copra.

The gasoline shortage is most critical in Honduras. Unlike other Central American countries Honduras does not have railroads to furnish a substitute for truck transportation. As a consequence of the gasoline curtailment crops are rotting in the fields and the shelves of the stores in the small villages are completely depleted of all goods. Gasoline is now used exclusively for Governmental and industrial purposes. Private car owners receive no gasoline at all.

There is a serious shortage of truck tires. The two principal companies which did extensive trucking business between the capital city, Tegucigalpa, and the North Coast had such a limited supply of tires on hand that it was anticipated they would have to suspend operations on November 1, 1942, unless they received shipments of tires and tubes which they had ordered and which had been licensed by the United States Government. On October 18, the Empresa Alvarez suspended its trucking service between Potrerillos and Tegucigalpa and it was expected that Empresa Dean would do likewise. The trucking service supplied by these two truck lines is of the utmost importance because of the materials and foodstuffs which they transport to northern Honduras where the highway from Potrerillos to the capital is under construction. About 1,000 men are employed on the highway construction project; even with the two truck lines operating it was difficult to get food to them, and now that the lines have ceased to operate it will be practically impossible to get supplies through.

Honduras is more dependent on highway transportation than any other Central American country. A supply of tires and gasoline is necessary to avoid a complete breakdown of the highway transportation system, which would very seriously affect the internal economy of the country.

HIGHWAYS OF HONDURAS

The overall highway system in Honduras is not extensive, although there has been continued improvement in the types of construction from year to year. Table I gives the lengths of the various types for the years 1938 through 1942.

TABLE I

Highway Lengths by Types in Kilometers and Miles

	1938		1939		1940		1941		1942	
	Kilometers	Miles	Kilometers	Miles	Kilometers	Miles	Kilometers	Miles	Kilometers	Miles
Unimproved earth and non-surfaced	318	198	287	178	166	103	215	136	531	330
Improved earth, sand, clay and gravel	38	24	240	149	387	240	438	272	724	450
Waterbound macadam	---	---	---	---	---	---	---	---	---	---
Macadam surface treated	---	---	---	---	---	---	---	---	---	---
Bituminous concrete and asphalt	---	---	---	---	---	---	---	---	---	---
Cement concrete	---	---	---	---	---	---	---	---	---	---
Block stone	(A few streets in Tegucigalpa have been so paved)									
Not specified*	---	---	---	---	---	---	---	---	---	---
Totals	356	222	527	327	553	343	753	468	1,255	780

* In isolated regions of the country there exists roads which are passable with extreme difficulty even with high wheeled oxcarts. There are probably about 175 kilometers (109 miles) of such roads.

In past years much of the highway work has been concerned with repairs made necessary by the damage caused by the heavy rains between May and October of each year. In the fiscal year ended June 30, 1938, very few new roads were built because much repair work had to be done on existing roads. Most of the roadwork for that year consisted in improving the unpaved streets of Tegucigalpa, and in scraping the principal roads from the city of Tegucigalpa to the north and south coast respectively. The length of improved dirt roads passable at all times of the year increased from 38 kilometers (24 miles) to 240 kilometers (149 miles) in the 1939 fiscal year. In contrast the length of unimproved dirt roads was reduced from 318 kilometers (198 miles) to 287 kilometers (178 miles) in the same period. Considerable repair work was undertaken in the 1940 fiscal year, and approximately 14,000 lempiras (7,000 dollars) were spent on the maintenance of the section of the Pan American Highway between Choluteca, San Lorenzo, and Nacaome. On the Pan American Highway 15 kilometers (9.32 miles) were improved, 5 kilometers (3.1 miles) to the north of San Marcos de Colon and 10 kilometers (6.21 miles) to the south. In May 1940, the road from Tegucigalpa to Juticalpa, capital of the department of Olancho, was opened to traffic.

MAIN HIGHWAYS

Point to point mileage

In Table II are shown various highways in the country which might be used in the transport of materials useful for the prosecution of the war and for the development of the economic progress of the nation.

TABLE II

Strategic Highways of Honduras-1942

Termini	Length Kilometers	Miles
Tegucigalpa - San Lorenzo	127	80
Tegucigalpa - Potrerillos	217	135
Tegucigalpa - Guaimacu	105	65
Tegucigalpa - Lepaterique	32	20
Tegucigalpa - Danli	58	36
San Lorenzo - Choluteca	35	22

The above routes are all weather routes, of improved sand, clay, or gravel; in general they are 2-way routes with short stretches of one-way road, with frequent turnouts. The routes from Tegucigalpa to San Lorenzo and Potrerillos constitute the north-south route across the country. On this route it is necessary to ferry across Lake Yojoa for about 35 kilometers (22 miles). Although the highway does not extend all the way to Puerto Cortes, the Ferrocarril Nacional, which is owned by the government and operated by the Tela Railroad Company, provides transportation between Potrerillos and Puerto Cortes.

In Table III are shown secondary roads which might be useful in the development of districts containing metals, minerals, and other strategic materials.

TABLE III

Developmental Roads in Honduras, 1942

Termini	Length Kilometers	Miles
1) Tegucigalpa-San Juancito	27	17
2) San Juancito-San Juan	10	6
3) La Crucitas-Agua Fria	22	14
4) Joyitas-Yuscaran	13	8
5) El Sauce-Ojojona	11	7
6) El Sauce-Santa Buenaventura	5	3
7) El Zamorano-Guinope	24	15
8) Santa Rita-Copan-La Florida	14	9
9) Guinope-Manzaragua	11	7
10) Comayagua-La Paz	19	12
11) Jicaro Galan-Nacaome	8	5
12) Nacaome-Los Horcones (El Salvador)	40	25
13) San Marcos towards Choluteca (as of November 1942 this highway was not connected with the rest of the highway system)	24	15
14) Danli-El Paraiso	16	10
15) Guaimaca-Juticalpa	97	60
16) San Pedro Sula-Santa Barbara	129	80
17) Siguatepeque-Jesus de Otoro	40	25
18) Cedros-Minas de Oro	48	30
19) Potrerillos-El Paraiso	56	35
20) San Juan de Flores-Talanga	19	12
21) San Pedro Sula-Cofradia	43	27
22) La Esperanza-Yamaranguila	11	7

The routes 1 to 10 are all-weather roads but generally not up to the standard of the main roads. There are many steep grades on these roads and they all have many curves with short radii. On the other hand, routes 11 to 22 are dry weather only, usable by trucks, but with difficulty even in the dry season.

Cities and Towns Touched

From the capital, Tegucigalpa, all-weather roads radiate in all directions. They lead south to San Lorenzo, on the Gulf of Fonseca, passing through the towns of Sabanagrande and Pespire; northwest through Comayagua to Lake Yojoa (which must be ferried) to Potrerillos, then by railroad to Puerto Cortes on the North Coast; to the northeast at Guaimaca; to the east to Danli; and to the west to Lepaterique.

Bridges

Bridges for the most part are of stone, spandrel filled arch type, with a safe loading capacity of about 5 tons. A good many of the streams are forded, so high waters in the rainy season are the cause of frequent delays.

Motor Transportation

In Honduras motor transportation is the chief carrier of the lower income classes because the fares and rates are lower than the airline and they serve all points along the highway routes. Bus-truck lines extend in all directions from Tegucigalpa. The most important route follows the Carretera del Norte to Potrerillos. Practically the entire revenue traffic along this route is handled by one of two companies, either Empresa Alvarez or Empresa Dean. Operations on the highway between Tegucigalpa and San Lorenzo are carried on by small companies and independent drivers. A small line runs to Olancho. Local bus and car service is provided in the San Pedro and Tegucigalpa districts.

The principal motor bus and truck systems of Honduras are:

Empresa Dean, Empresa Alvarez, and Empresa Ochoa. All automobile, bus, and trucking operations, even of these companies have been greatly curtailed because of gas and tire shortages. The most important line in the whole trucking system is the Empresa Dean, which is owned jointly by the former Minister of Finance, Julio Lozano, and a British subject, Norman Scholes, who is general manager of the company. In December 1942, the Dean fleet consisted of 12 trucks, and a total of 12 buses and station wagons. This equipment is all powered by Ford motors. Trucks are of 2-ton capacity, while the buses are designed to carry 15 passengers and one ton of freight. Empresa Dean has the parcel post and second class mail contract along its route. The second in importance in motor transportation is Empresa Alvarez, owned by a Honduran citizen of Spanish descent, Jose Alvarez. This company operates about 10 International trucks and buses of 3-ton capacity. Empresa Ochoa is the property of a Honduran syndicate which operates a fleet of about 20 passenger sedans and station wagons. There are several other transport companies offering themselves for public hire, each with 3 or 4 trucks or station wagons, having Ford and Chevrolet motors. The names of these minor companies are as follows: Galo, Madrid, Yu-Shan, Ramirez, Cruz, Lagos, and Aleman. Exact figures on the number of vehicles owned by each is not available, but according to Senor Juan Alvarez, at least 80 trucks for hauling freight could be secured on short notice from the independent owners in the immediate locality of Tegucigalpa.

Transportation of oil and gasoline from Amapala to Tegucigalpa is maintained by means of 8 tank trucks, the chassis of which are owned by M. A. Marchetti who operates the service. Four of the tanks are owned by the West India Oil Company, another by the Rosario Mining Company. The remaining three chassis are held in reserve by the trucker. Prior to the rubber and gasoline shortage in Honduras, Empresa Dean operated every day of the week. About 3,000 tons of freight and some 6,000 passengers a year were carried. Since the beginning of the war service has been limited to 3 times a week each way, connecting with the National Railroad at Potrerillos. Dean operates a Diesel-powered ferry on Lake Yojoa, which will carry 4 or 5 loaded buses or trucks. There is also a small motor boat which is seldom used.

There are 4 other services which were not mentioned above, available only in the dry season: (1) the northward extension of the Tegucigalpa-Potrerillos line to San Pedro Sula and La Lima; (2) the Talanga-Cedros-Minas de Oro line which branches northward at Talanga from Tegucigalpa-Juticalpa system; (3) northeast extension of the Tegucigalpa-Juticalpa system to Catacamas; (4) the western extension of the Tegucigalpa-San Lorenzo system from Jicaro Galan which is just north of San Lorenzo to San Salvador.

Transportation facilities in Honduras have been seriously curtailed, principally due to the lack of tires. No substantial shipment of tires has been received in Honduras since 1941. All private cars are laid up because there is no gas to operate them. Most of the taxi and truck firms have suspended operation. Only the two larger truck firms, Empresa Dean and Empresa Alvarez, are maintaining any sort of a semblance of their former schedules, and their operations are only about one-half what they formerly were.

In December 1940, there was a total of 1,569 motor vehicles registered in the country. The types and ownership of vehicles are shown in Table IV.

TABLE IV

Registration and Ownership of Motor Vehicles, January 1, 1941

Type	Total	Private	For Hire	Government
Passenger cars	778	563	170	45
Buses	40	39	---	1
Trucks	751	653	---	98
Total	1,569	1,255	170	144

On the same date there were 1 trailer and 2 special trucks in operation in Honduras. Relation of these figures to population figures indicates that there was one private passenger motor vehicle for each 1,775 people in the country.

Highway v. Rail Shipping

Air, railway, and highway transportation do not directly compete with one another in Honduras. Generally speaking, the north coast is served by railroads, while the central and southern parts of the country are entirely dependent upon highway or air transportation.

PAN AMERICAN HIGHWAY

As the Highway passes through Honduras it skirts the southern (Pacific) coast from the Paso Amatillo, crossing the Goascoran River at the El Salvador boundary, passing easternly through Nacaome, Choluteca, and San Marcos de Colon to El Espino on the Nicaraguan border, a distance of 164 kilometers (102 miles). Until the end of 1941, there was very little all-weather road on the Pan American Highway in Honduras. In November 1942, only that section between Nacaome and Choluteca, about 55 kilometers (34 miles), was supposedly passable at all times during the year, but not without a good deal of difficulty in the rainy season. In the dry season truck traffic is possible between Los Horcones, El Salvador, and La Cabezas, Honduras a point about 20 kilometers (12 miles) east of Choluteca;

a total distance of about 113 kilometers (70 miles). There are no legal prohibitions or restrictions on the type of vehicle which may be used, although there undoubtedly are physical restrictions as to load, due to the poor surface condition of the roadways.

Present plans call for a passable road from the Mexican-Guatemala boundary to the Panama Canal by the end of May 1943. The Public Roads Administration will construct the permanent improvements, while all temporary construction is under the jurisdiction of the United States Army Engineers. Preliminary engineering work is being done concurrently by the Public Roads Administration and the Army Engineers. Originally it was planned that the former would flag the route and work out the projections of the survey while the latter was to do the field work. However, at the time the survey began, since the Public Roads Administration did not have the personnel available, it is believed that the United States Army Engineers did all of the surveying. It was reported that the survey began on August 15, 1942, consisting of 3 parties of 15 Americans, in all, one party based at Choluteca, another at San Marcos de Colon. A third party was to begin on the western end of the road at Goascoran, consisting of 1 American as chief, with the rest of the crew Hondurans.

Actual construction of permanent way and improvements will be done by contractors under the direction of the Public Roads Administration. It is contemplated that as much as possible of the temporary road will be converted to permanent way after July 1, 1943. Honduras does not contemplate any permanent construction until after this date.

In April 1942, there was no road of any description in the rolling country between Goascoran and Nacaome. There was a road between San Lorenzo and Choluteca, but it was in such bad shape that repair work would be necessary before it could be used. West of San Marcos de Colon is the most mountainous part of the highway in Honduras.

Specifications

The specifications for the permanent road have been set up by the Public Roads Administration as follows: not over 8 percent grade up to 300 meters (984 feet); not over 7 percent grade up to 2,000 meters (6,562 ft.); and not over 6 percent grade for longer distances. Minimum radius of curvature 70 meters (230 feet).

The specifications of temporary (pioneer road) call for an 11 percent gradient wherever it is not feasible to have less, and a minimum radius of curvature of 30 meters (98.43 feet). The crown of the road will have a width of 3 meters (10 feet), with a 1-meter (3-foot) shoulder on either side. Surfacing will consist of two 10-centimeter (4-inch) layers of gravel, rolled and compacted separately. All bridges constructed under the authority of the United States Army Engineers will be temporary wooden structures. All permanent bridges along the Pan American route will be built by contractors with funds supplied by Public Roads Administration from the Inter-American Highway appropriation.

The pioneer road will follow the route of the Pan American Highway wherever that is practical, taking all factors into consideration. The principal objectiv is to rush a passable road through as quickly as possible. Frequently it will be necessary in obtaining this objective to deviate from the route of the permanent road, and this can be expected particularly through mountainous terrain.

Progress of Construction

In April 1942, it was reported that work was greatly retarded due to the shortage or road building equipment. An effort was made by one of the contractors for the permanent way to arrange a loan of idle equipment from the United Fruit Company.

Financing

The Export-Import Bank has loaned to the Government of Honduras $2,700,000 for construction on the Pan American Highway. The U. S. Public Roads Administration has made available the sum of $2,000,000, to be matched by $1,000,000 put up by Honduras. The funds for the United States Government's share are obtainable from the appropriation for the Inter-American Highway.

Three bridges are to be constructed on the western section of the highway that is over the Goascoran, Guacirope, and Grande Rivers. It is estimated that the Goascoran bridge will cost about $250,000. The funds will be supplied under the "cooperative plan," and half of its cost will be borne by the El Salvador Government. The other two bridges will cost a total of about $250,000 which are likewise being financed through the cooperative plan. The three bridges will be of steel construction with truss design. Their lengths vary between 75 and 120 meters (246-394 feet).

Transportation of Strategic Materials

In November 1942, the section of the Pan American Highway in Honduras was used but little in transporting strategic materials. The highway is connected with San Lorenzo which is connected with the port of Amapala by a lighter service. Deep sea ships can dock at the port of Amapala.

Relation to National Highway System

It has only minor importance relative to the national highway system at this time. Upon completion of the pioneer road scheduled for May 1, 1943, its importance will undoubtedly increase since it will afford an outlet to all the other Republics of Central America.

PLANNING AND FINANCING

Planning and financing of highways in Honduras are the concern of three agencies; Government of Honduras, Corps of Engineers of the United States Army, and the United States Public Roads Administration. That part which is the concern of the Honduran Government is under the jurisdiction of the General Highway Office in the Ministry of Development.

The temporary, pioneer road is being financed, designed, and built by the United States Army Engineer Corps. All permanent improvements on the Pan American Highway are taken care of under the cooperative agreement between the Honduran Government and the United States Public Roads Administration. Information is not available as to maintenance on the Pan American Highway.

Sources of Funds

Each fiscal year the Honduran annual budget carries an item devoted to highway construction and maintenance. The budget allocates a certain sum which it is estimated will be collected in revenue during the ensuing year. In Table V are shown the budget estimates for the past 5 fiscal years.

TABLE V

Highway Budget for Honduras

	LEMPIRAS					
	1936-37	1937-38	1938-39	1939-40	1940-41	1941-42
Office expenses, engineers and overhead	33,244	33,244	33,244	28,244	23,244	22,044
Maintenance of the Atlantic-Pacific highway	150,000	150,000	150,000	150,000	150,000	150,000
Survey and construction of Occidental highway	150,000	150,000	150,000	---	---	---
Prolongation of highway from Siguatepeque to La Esperanza	50,000	50,000	50,000	50,000	50,000	50,000
Prolongation of Inter-American highway	90,000	90,000	90,000	90,000	90,000	90,000
Construction and maintenance of Olancho highway including the Yoro branch	100,000	100,000	100,000	---	---	---
For purchase of equipment, fuel, and spare parts	150,000	150,000	150,000	150,000	155,000	298,208
Surveying the Western highway	---	---	---	150,000	150,000	170,000
Surveying the Eastern highway from Danli to San Lucas	---	---	---	---	---	150,000
Total	723,244	723,244	723,244	868,244	868,244	1,130,252

Revenues are from several sources, and they are shown for recent years in Table VI.

TABLE VI

Revenues for Use on Highways

				LEMPIRAS		
	1936-37	1937-38	1938-39	1939-40	1940-41	1941-42
Share of import duties	438,625	296,415	213,096	195,482	191,665	260,648
Peoje (bridge-toll) tax	---	136,769	261,049	231,139	226,626	326,429
Gasoline import tax	82,320	70,250	59,303	61,661	60,457	100,389
Capital tax	9,286	31,827	9,935	31,667	30,852	46,006
Mining rights	23,616	23,931	14,555	21,632	21,209	21,553
Tax on industries and concessions	15,912	9,625	11,100	18,300	17,943	57,120
Land rights	---	36,703	35,137	41,564	40,751	51,294
Water rights	104,653	82,099	81,395	78,311	76,782	114,580
Kilometer tax	46,383	34,512	34,473	31,868	31,246	64,697
Various revenues	449	1,113	3,201	6,820	6,687	8,772
1% ad valorem tax Decree 63, 1940	---	---	---	---	---	84,762
Total	723,244	723,244	723,244	718,444	704,218	1,130,250

An allocation of funds has been made by the United States Army and the U. S. Public Roads Administration has made available $2,000,000, to be matched by a sum of $1,000,000 put up by Honduran Government for construction on the permanent way, of the Pan American Highway.

Table VII shows the actual income and expenditures for highway development during the fiscal year 1940-41.

TABLE VII

Income and Expenditures on Highways, 1940-41

Income	Lempiras
Importation of gasoline	109,132
Peoje (bridge-toll) tax	598,539
1% Decree 63, of 1940	78,821
Capital tax	34,679
Mining rights	17,431
Land rights	51,010
Current accounts	69,843
Future accounts	201,801
Other items	309,854
Total	1,471,110

Expenditures	Lempiras
Office expenses, etc.	13,805
Treasury expenses for highway	5,815
Atlantic-Pacific highway	392,601
Western highway survey	156,761
Siguatepeque to La Esperanza	139,202
Pan American highway	34,126
Prolongation and maintenance of Olancho highway	159,120
Purchase of equipment	466,125
Municipal construction 15%	638
Current accounts	94,844
Other items	6,408
Public credit account	1,665
Total	1,471,110

MATERIALS AND EQUIPMENT

All asphalt and cement used in Honduras is imported. In Table VIII is shown the value of cement imported in recent years.

TABLE VIII

Imports of Cement

Year	Value in Lempiras
1937-38	12,000
1938-39	14,000
1939-40	27,882
1940-41	18,150

In the year ended June 30, 1938, all the cement was imported from Germany; in 1940 it came from Italy via Yugoslavia. The other two years it all came from the United States. The consumption of cement has never been very high; amounting to about 20,000 bags in 1940.

As might be expected, all machinery used on highway work in Honduras is imported, and it all came from the United States. At the end of the fiscal year 1937 the machinery on hand had been purchased at an approximate cost of $170,000. Purchases of machinery in recent years is shown by value in Table IX.

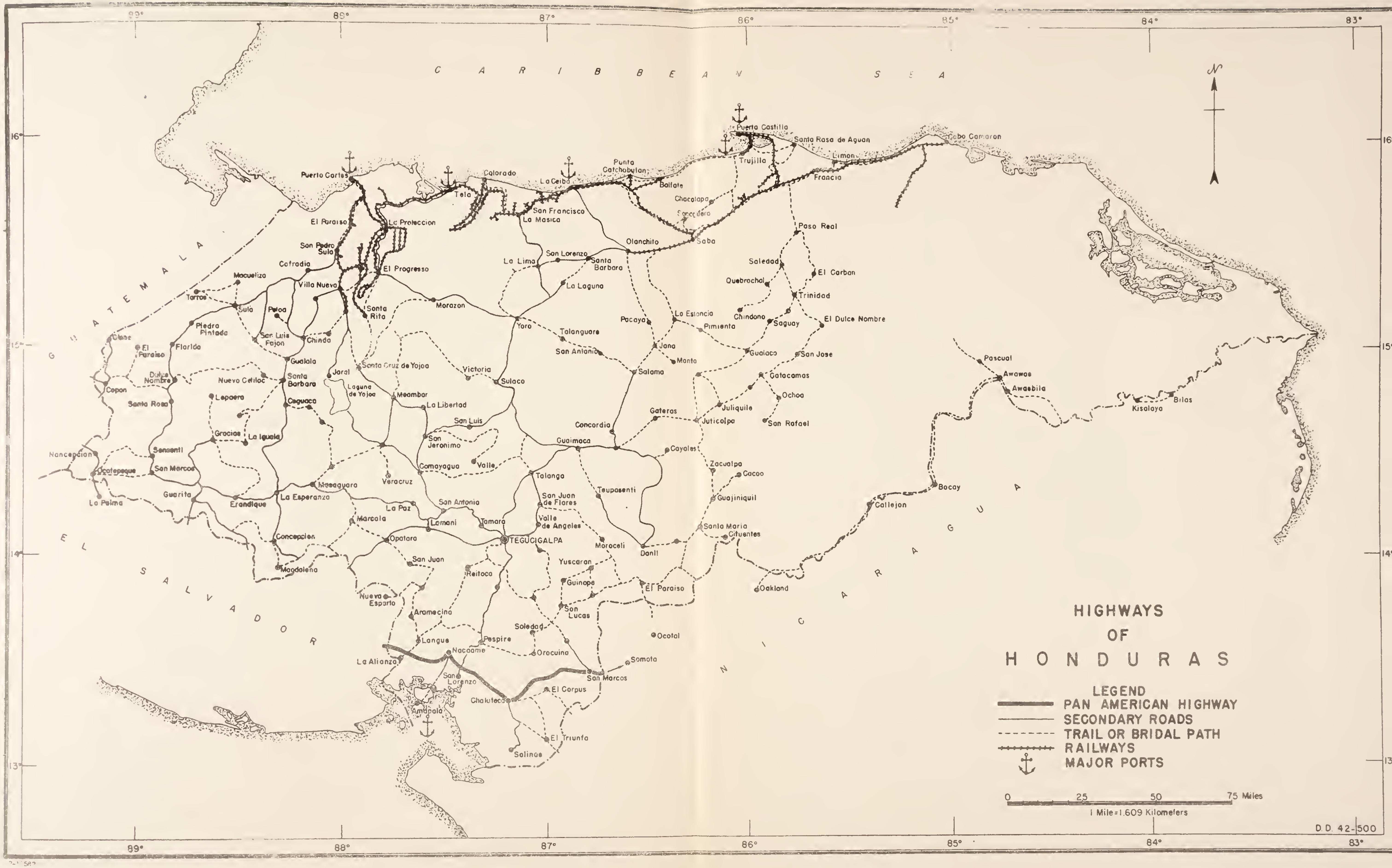
TABLE IX.

Machinery Purchases

Year	Imports of equipment, machinery, and spare parts
1937-38	24,000 lempiras
1938-39	36,000 "
1939-40	304,844 "
1940-41	266,126 "

Equipment purchased consists for the most part of picks, tractors, scrapers, shovels, tools, and machinery. American firms have had no outside competition in the past and none is expected in the future.

Such road building machinery and equipment as is available is in poor condition. It cannot be ascertained just what equipment is on order or in transit.



HIGHWAYS
OF
HONDURAS

THE REPUBLIC OF NICARAGUA
(La Republic de Nicaragua)

Nicaragua is the largest of the five Central American republics, with an estimated area of 57,143 square miles. It is about the size of Wisconsin. The estimated area of the country is provisional, however, due to the pending settlement of the northern boundary with Honduras. The country is bounded on the north by Honduras, on the south by Costa Rica, and on the east and west by the Atlantic (Caribbean Sea) and Pacific oceans respectively; the two coastlines total some 615 miles.

The monetary unit of Nicaragua is the cordoba, which at the present rate of exchange is equal to twenty cents in United States money, five cordobas being equal to one United States dollar. The language is Spanish.

Managua, the capital of Nicaragua, is located on the southern shore of Lake Managua, which in turn is located in the west coast area near the central part of the country. According to the 1940 census there are 118,448 inhabitants in the capital, and it is the largest city in the country.

Some of the more important cities in Nicaragua are Leon with 38,687 inhabitants; Granada with 22,291; Masaya with 17,823; Chinandega with 16,321 inhabitants; and Corinto with 2,500.

Western Nicaragua has two seaports, Corinto and San Juan del Sur, through which most of the imports and exports of the country pass. The important eastern ports are Bluefields, Puerto Cabezas, and San Juan del Norte.

The Pacific Railroad of Nicaragua, a government owned and operated line, is the main railroad of the country having a total length of 367 miles, all single track.

GEOGRAPHY AND CLIMATE

The outstanding physical feature of Nicaragua is the northern extension of the Andes Mountains, which cuts across it in a northwesterly direction, dividing the country sharply into two sections which have but little access to each other. On the Pacific side of this mountain range about one-fourth of the country is situated, while the other three-fourths are situated on the Atlantic side. The climate of the country varies with the altitude and may be classified as warm, temperate, and cool.

Nicaragua might be easily divided into four more or less arbitrary geographical regions. The most important part of the country is the narrow Pacific coast region. In this section the capital is located, most of the agriculture is carried on, and according to the census, nearly half of the population reside. Elevations in this area vary from 500 to 2,500 feet. The climate of the Pacific coast region is tropical, the average temperature being around 78°F., with extremes of 40° and 95°.

The second region, comprising most of the mountainous part of the country includes the eastern half of the two large lakes. Beginning as rolling prairie around the lake shore, the elevation rises quickly to the eastward into the principal cordillera, elevations reaching from 2,000 to 3,000 feet. In some instances individual mountains rise as high as 4,000 and 5,000 feet. The headwaters of the Rio Grande de Matagalpa, the principal river of the country, flow easterly through this section, and the large cattle ranches in the country are located in its valleys. The climate of this area is similar to that of the coastal region, with an average temperature of 75°.

Lying between the mountainous and the coastal regions are the two lakes for which Nicaragua is justly famous, namely Lake of Managua, and Lake of Nicaragua. Both are fresh water lakes.

The third of these geographical regions is the inland sector which lies east of the central cordillera. This area is mostly an uninhabitated wilderness consisting mainly of timbered plains and rolling hills, cut by large rivers. Because of the roughness of their surroundings these rivers are full of rapids, and are not navigable for any practical purposes. The region has rich timber, mineral, and agricultural resources, which have been retarded because of difficulty of access, however, its development has proceeded in recent years with the advent of air transportation.

The fourth and last region is the Caribbean littoral, which is largely swamp land. Like the inland region, this area has inadequate contact with the western part of the country, and that fact is reflected in many of the present-day problems of the eastern departments.

Nicaragua has no river system of transportation. Among the principal rivers of the country are the Cucalaya, Banbana, Prinzapolka, Grande de Matagalpa, the Mico or Escondido, and the San Juan. All of these rivers flow across the eastern section, and are flanked on either side by mountains.

GOVERNMENT

The government of Nicaragua is unitary, republican, and democratic, and is divided into three branches, these being the legislative, executive, and judicial, which are independent and separate in their functions. This set-up of the government is according to the constitution of March 22, 1939, which replaced that of 1911.

For administrative purposes, the republic is divided into fifteen departments and a national district, which is the seat of the national capital. The heads and directors of the various departmental governments are named by the president. The police are supported by the national treasury.

Freedom of the press, speech, and religion are purely democratic policies and are observed in Nicaragua. Military service is obligatory, members of the army in active service may not vote or take part in any political affairs.

The Legislative powers are vested in a Congress, which is divided into two houses, the Chamber of Deputies and the Senate. The Congress convenes on April 15 of each year for 60 days. The opening session is attended by the president, and he gives a report of the activities of his administration during the year.

Deputies are elected by a popular vote for a six-year term, one for each 30,000 inhabitants, with an equal number of alternates elected at the same time, with a provision that each department must have at least one deputy. Restrictions for Deputies are as follows; they must be a layman, a citizen, and be at least 25 years of age.

The Senate is composed of 15 senators elected also by popular vote for a six-year term, and the ex-presidents who are senators for life. Along with each elected senator an alternate is also chosen. Restrictions for Senators are as follows; they must be lay citizens, and not less than 40 years of age. Trials of impeachment which are made by the Chamber of Deputies are heard by the Senate. The deputies, the executive, and in judicial matters, the Supreme Court of Justice, exercise legislative initiative.

The president is vested with the executive power. He is elected by direct, popular vote for a term of six years, and is not eligible for immediate re-election. For a person to become president he must be a Nicaraguan by birth, a layman and over 30 years of age and must have resided in Nicaragua during the five years prior to the election date. Should the president become incapacitated and not able to discharge the duties of his office, the position is filled by a designate, three of whom are elected each year by the Congress from among their members. It is the duty of the appointed designate to call an election to choose a president to fill out the term. No vice-president is elected. Congress is held responsible for the acts of the president. Some of the duties of the president are the following; he is entrusted with the government and administration of the state; he is commander-in-chief of the armed forces, enforces and executes the laws passed by Congress and issues decrees, resolutions and instructions to supplement them; he conducts foreign relations, supervises the collection and expenditure of public funds and directs public education. Among other of his duties are, supreme authority over the police and sanitation matters, and in case of war or other national crisis, he may for the duration of the crisis, or as long as public safety may require it, suspend the constitutional guarantees.

The president is assisted by a Council of Ministers, composed of the attorney general, and secretaries of state. The secretaries of state must be over 25 years of age. They countersign all presidential decrees and agreements relating to their respective branches, and each is responsible for all acts which he signs or authorizes.

The judicial branch of the government comprises the Supreme Court of Justice, five courts of appeals, and such district courts and local justices as are provided for by law. The Supreme Court consists of five justices and two alternates, all elected for six-year terms by the Congress with no bar to re-election. The Supreme Court has original jurisdiction over admiralty questions, cases regarding the diplomatic corps, and matters pertaining to extradition. Appeals from lower courts are heard by the Supreme Court, and the constitutionality of the acts of Congress, and administrative bodies are decided.

The supreme law of the republic is the constitution. The president with the consent of the Council of Ministers, or ten deputies, initiates amendments to the constitution. Such amendments or proposals are passed by a two-thirds vote of both houses for two successive years, and become effective upon approval by the president or Council of Ministers.

Nicaragua is represented by a Minister in the United States. There are a number of consulates general stationed in various sections of the United States or her possessions which also transact diplomatic business between the United States and Nicaragua.

The United States is represented in Nicaragua by a Minister at Managua, and a Consular agent in Matagalpa.

POPULATION

The population of Nicaragua according to the census of 1940 is 1,380,287 inhabitants, with an average density of 24 persons to the square mile. About half of the population resides in the Pacific coast region. The 1940 census figure compares with an estimated population of 350,000 in 1880. Managua, the capital city, is the most densely populated of the large cities. The people of the western half of Nicaragua are a mixture of Spanish and Indian extraction, some of pure Spanish descent and many Indians. The population of the eastern half of the country is composed mainly of Mosquito and Zambo Indians and Negroes from Jamaica and other islands of the Caribbean, with some Americans. Since 1930 immigration has been severely restricted for Chinese, Turks, Arabs, Negroes, and Jews.

INDUSTRY

Agriculture is the principal source of national wealth. The two main agricultural products of the eastern part of the country are bananas and cotton. Oranges, pineapples, and yucca are grown for domestic consumption. In the western half of the country there is more of a variety of products grown, the most important being coffee, sugar cane, cacao, corn, and beans. Sugar producers have a combine, under government control which fixes the price for internal sales; profits are now made solely on domestic consumption. A small amount of rice is grown, also some wheat in the hilly Nueva Segovia area, and around Masaya tobacco is cultivated. In value, coffee exports constituted (1940) 22 percent of total exports, bananas 5 percent. Under the Inter-American Coffee Agreement of November 28, 1940, Nicaragua's export quota was fixed at 309,000 bags, of which 195,000 was to be taken by the United States. With a few exceptions the greater part of the food supply of the eastern section is imported from the United States. The western part of the country grows much of its own food.

Cattle raising in Nicaragua is carried on for export as well as for domestic consumption. The largest herds are found in the west, particularly on the plains of Chontales, and in the departments of Chinandega, Rivas, Madriz, and Esteli. While natural conditions are good and pasture lands abundant, inadequate transportation impedes full development. In 1940 the exports of cattle amounted to 5,683 head and cattle hides to 124 tons.

In Table I which follows the estimated livestock population is shown.

TABLE I

Estimated Livestock Population

Cattle	700,000 head
Pigs	250,000 "
Horses	150,000 "
Sheep	15,000 "
Goats	5,000 "

Timber production is on the decline in Nicaragua, though the forests contain some cedar and mahogany which were formerly exported on rather a large scale. In the virgin forests wild rubber is abundant, but owing to the labor shortage rubber plantations are very few.

As for mining in Nicaragua, there are several gold mines, and some income is derived from them. Production of gold in 1940 amounted to 164,356 fine ounces. Exports of gold, valued at 5,757,998 dollars constituted 61 percent of total exports, and all went to the United States. There is also some silver mined in Nicaragua, the exports of which were valued at 100,149 cordobas for 1940. Some copper is mined, and a few precious stones are also found. The gold mines are found in both the western and eastern areas of the country. In recent years a revival of gold mining has been brought about, due to the price being paid for this mineral by the National Bank of Nicaragua. Air transportation has also been instrumental in the revival of gold mining. The chief mining center of El Jabali, exploited by a domestic corporation, employs 700 persons, and has a daily capacity of 300 tons of ore. In the Department of Leon the La India Mine is operated by a United States corporation, organized under Nicaraguan law; it has its own airport and employs more than 700 persons. Gold exports of the country by mines, in 1940, are shown in Table II which follows.

TABLE II

Gold Mines and Dollar Value of Gold Mined for 1940

Mine	Value in dollars
Siuna	1,603,000
Bonanza	1,572,000
La India	1,278,000
Jabali	506,000
Others	799,000
Total	5,758,000

Nicaragua, being mainly an agricultural country, has very little manufacturing. Consequently, manufacturing development has been on a modest scale, and such as there are, are mostly devoted to the processing of agricultural commodities. Manufactures in general are small, processes are simple (very often the work is done by hand) and the market for these is local. Output is in most cases destined for domestic consumption. The machinery is all imported. In most of the Pacific coast departments sugar grinding is carried on. Returns from eleven of these departments indicated a combined production in 1940 of 17,971,000 pounds. Closely related to the sugar industry are several distilleries, which produce rum from native sugar cane. A number of tanneries exist, utilizing hides from domestic livestock, which are in turn supplemented by shops manufacturing footwear, luggage and other leather goods. The manufacture of soap is carried on in 46 factories. Several varieties of soap are produced and it is all used for domestic consumption. There are a few sawmills. Some clothing is manufactured in various parts of the country. One of the newer industrial undertakings is the generation of electricity which is being carried on in about 25 plants in various parts of the country. Tobacco factories supply most of the local demand, and there are other establishments which produce chemicals, pharmaceuticals, furniture, ice, perfumes, musical instruments, and other miscellaneous items. A firm to produce cement has recently been organized. The government has tried to help develop these industrial enterprises by advancing loans to some of the smaller firms through the Mortgage Bank.

Imports and Exports

In Table III which follows the foreign trade of Nicaragua is shown for the years 1929-1940 (in United States dollars).

TABLE III

Imports and Exports by Dollar Value for Years 1929-1940

Year	Imports	Exports	Year	Imports	Exports
1929	11,797,440	10,872,526	1937	5,620,871	7,038,342
1932	3,479,878	4,541,597	1938	5,119,579	5,884,154
1935	5,072,876	5,658,163	1939	6,364,891	8,300,972
1936	5,579,620	4,648,186	1940	7,052,486	9,494,142

The principal exports of Nicaragua are gold, coffee, bananas, lumber, cotton, and many other products too numerous to list separately. Imports of Nicaragua, to list a few, are namely, machinery and apparatus, cotton goods, iron and steel products, drugs and chemicals, foodstuffs, and other miscellaneous products.

Trade is carried on mainly with the United States, which bought 94 percent of all Nicaraguan exports in 1940 and supplied Nicaragua with 84 percent of its total imports. Nicaragua carried on some trade with Germany, Great Britain, the Netherlands, Peru, and France. With the exception of Peru, Nicaragua has ceased trading with the other countries mentioned because of the war.

CONCLUSION

Roads in Nicaragua have been neglected in the past, and it has been only in recent years that a plan has been inaugurated to improve the highway system of the country.

All of the main roads of the country focus at Managua, and it is the only city in Nicaragua with modern street paving. The development of the economic structure of the country has been greatly retarded because of poor transportation facilities.

With the construction of the Pan American Highway in the country, the importance of good roads is being realized, and as a result several roads are now being built which should benefit the country. Among these roads is the Atlantic-Pacific Highway, which will aid in the opening up of the eastern section of the country. Commodities heretofore lost because of the lack of transportation facilities are now being made available for consumption and export.

Funds loaned to the Nicaraguan Government by the Export-Import Bank of the United States have helped finance the building of the roads.

The construction of the highways has given many employment, and is creating a feeling of good will and cooperation between the United States and the Latin American Republics.

THE HIGHWAYS OF NICARAGUA

ROAD MILEAGE BY CONSTRUCTION TYPE

Up to June 30, 1939, the following highway construction had been accomplished by the Nicaraguan Ministry of Fomento.

	Length		Grading		Macadam		Asphalt	
Project	kilometers	miles	kilometers	miles	kilometers	miles	kilometers	miles
Tipitapa-Maderas	29	18	29	18	20	12		none
Maderas-Sebaco	51	32	1	1		none		none
Casa Colorado			5	3			2	1
Masachapa	14	9	2	1		neg.		neg.
San Benito-Las Banderas			12	7	2	1		none
Managua-Tipitapa			12	7	11	7	7	4

Considerable work has been done on the stretch of highway from Maderas to Sebaco, and also on the stretch from Sebaco to Matagalpa in the way of repairs and maintenance.

In October of 1938, a flood caused damage on the Tipitapa-Maderas project which cost approximately $300, and additional structures for drainage were installed where necessary.

The above table does not include the three bridges completed at Maderas, Sebaco, and Esteli by American engineering firms under contract to the Bureau of Public Roads; this work had been completed prior to June 30, 1938.

Only an estimation can be made for unimproved earth roads and trails throughout Nicaragua, 1,550 miles of unimproved earth roads, and 1,500 miles of trails; these roads are passable at certain periods of the year by automobiles. It is estimated that roads passable for automobiles at all seasons do not exceed a total of 100 miles at this time.

PLANNING AND FINANCING

The Ministry of Public Works has full authority over the planning and financing of the highways throughout Nicaragua. Funds for this work have come from the General Revenues of the State, which is the principal revenue collecting agency in Nicaragua. A tax specifically designated for road building purposes is that of 20 centavos per gallon of gasoline consumed, produced, or sold in the Republic; 40 centavos per kilogram on lubricating oil or grease; four cordobas per kilogram of silk or silk manufactures, natural or artificial, imported into the country; and four cordobas per kilogram of perfumery, cosmetics, essences and raw materials for the preparation of the same, imported into the country. Two percent of the Customs Revenues of the Republic are also set aside for highway improvements and for construction of new roads.

For coming periods, however, it is viewed as likely that a certain amount of funds for financing highway projects in Nicaragua will be obtained by loans from the United States Import-Export Bank. Especially is this so for work on the Pan American Highway.

Expenditures have been estimated by competent engineers as being rather large on the route of the Pan American Highway. No other figures, or subdivisions into construction and maintenance expenditures, are available, nor any indication of the amount budgeted for highway construction.

MATERIALS AND EQUIPMENT

Cement is used on highways for culvert and bridge construction only in Nicaragua. Asphalt imported amounted to 206,306 kilograms valued at 4,918 cordobas, in 1938, and 1,385,700 kilograms at 13,720 cordobas, in the first six months of 1939. This importation was for both street and highway paving.

As for road-building equipment, none with the exception of a few trucks and three or four very small German rollers, was imported in the period between July 1, 1938 and June 30, 1939; however, in July of 1939 about $35,000 worth of road-building machines, all of American origin, were imported. Because of the loans made by the Import-Export Bank, it is thought that American machinery will be imported even in larger quantities as the highway building program progresses.

CHANCES FOR AMERICAN PARTICIPATION

Chances for American participation in road-building construction in Nicaragua are believed to be very good. Perhaps this is due to the financial aid that has been rendered through the Import-Export Bank. There are a number of American firms represented by agents, mainly in Managua, that sell roadbuilding machinery and equipment. The Ministry of Fomento has had trouble in the past with machinery it has purchased, so as to alleviate this difficulty they are endeavoring to keep the standards for machinery adopted as nearly uniform as possible, which reduces the reserve of parts and materials necessary to be kept in stock.

In addition to the work of the Ministry of Public Works, some municipalities in Nicaragua, notably that of Managua, have undertaken construction work. The government of the National District (Managua) reports that between July 1, 1938, and June 30, 1939, it accomplished the following work:

9,235.2 square meters of asphalt street paving.
1,618.96 meters of sewage piping.
1,944.70 lineal meters drainage gutters.
606 lineal meters rain water drainage piping.

The National District receives for this work 30 percent of the centavo tax collected on each liter of alcohol sold in the country, save that sold in the Department of Zelaya.

The "La Luz Mines, Ltd.", a gold mining firm at Suina, Nicaragua, which has imported all its supplies by air, is constructing a road to connect its plant with a neighboring point, Alicamba, in order to shorten the flying time from Puerto Cabezas.

The distance of the road to Alicamba from the mine is about 50 miles, with roads to limestone deposits and stands of virgin timber necessary for construction work, and also a new air field at Alicamba. The equipment on hand is as follows: 4D6 track-laying tractors complete with lighting sets; 3 trailbuilders; 3 towing winches, two single drum and one double drum; 3 clearing tackles; 2 track-laying graders; 2 revolving rippers; one rollover scraper; two rollers; one D. C. electric generating set for lights; one speeder shovel, three 3-ton dump trucks; and two three-ton stake body trucks. The total value of the above listed equipment was approximately $50,800.

During the rainy season work has to be suspended temporarily until the rains are over. Work has been started from both ends, three miles at the Suina end have been roughly graded, and seven miles at the Alicamba end have been fairly well completed. A preliminary cost estimate of $3,000 per mile was made, and judging from the work done thus far, the company expects to keep well within this estimate.

PAN AMERICAN HIGHWAY

The Pan American Highway was the inspiration of a group of Latin American engineers meeting in Washington in the early nineteen twenties. It has been the goal of the United States and the Latin American Republics to complete the highway at the earliest possible date. Even though there have been many obstacles in the way, the progress made has been very good. In some of the countries those obstacles have been more than in others, consequently some sections are nearer completion, however, the project as a whole is moving along better than was first anticipated.

The actual construction of the highway is being done under the supervision of the Public Roads Administration, and the United States Army Engineers. The permanent portions of the road are being constructed by the Public Roads Administration and the temporary portions by the U. S. Army Engineers. The Public Roads Administration will have charge of the flagging of the temporary route and work out the projections of the survey, and the Army Engineers will do the remainder of the field work.

On January 1, 1940 actual operations on the Nicaraguan section of the Pan American Highway were started. It was anticipated that approximately two years would be required to complete the project, provided no unseen hazards should crop up. If everything had gone as has been planned the section running through Nicaragua would have been completed by the close of 1942, or the first part of 1943, but now it is planned to have the "Pioneer" sections finished by June 30, 1943.

The length of the highway through Nicaragua is 394 kilometers (245 miles). The physical conditions of the highway as of September 1, 1941 were as follows: 146 kilometers (91 miles) are paved, 68 kilometers (42 miles) were dry weather road, and 180 kilometers (112 miles) were trails.

Insufficiently supplied with roads, and other transportation facilities, the country has been for years unable to develop its many and varied natural resources, or to closely connect its important producing and consuming areas. When certain sections of the Pan American Highway are completed the foregoing situation will be greatly relieved. The project does not call for a system of feeder roads which have aided greatly the development of areas which in the past have access to valuable markets, either domestic or foreign. With the construction of the Pan American Highway a great forward step has been taken, for the highway runs through some of the more important agricultural sections of the country, from which such feeder roads as are necessary may be developed in the future.

The highway as now projected is expected to offer decided advantages to coffee growers, by affording quicker and cheaper truck service to Managua and the railway, from where the coffee is shipped to Corinto for export. Other agricultural sections in the vicinity of the highway will be greatly aided, as it will afford these areas a good domestic market for the sale of their commodities at Managua.

The route of the Pan American Highway through Nicaragua is as follows: on leaving Choluteca in Honduras the highway runs east to Somoto in Nicaragua, from there it runs in a southeasterly direction to Pueblo Nuevo and Condega, from Condega it proceeds south to Esteli, from Esteli it runs east to a point north of Matagalpa, at this point it runs directly south to Matagalpa, from Matagalpa it runs southwest to Sebaco, from Sebaco it runs south to Ciudad Dario, Maderas, S. Benito, and Tipitapa, from Tipitapa it runs in a southeasterly direction to Managua, from Managua it continues south to Casa Colorado, from Casa Colorado it runs southeast through Diriamba, Jinotepe, Saint Teresa, Nandaime, Rivas, La Virgen, Sapoa, and from Sapoa, Nicaragua, it crosses the boundary to Liberia, Costa Rica.

Rubber, the most strategic commodity grown in Nicaragua, does not utilize the Pan American Highway for its transportation. The reason for this is that plantations are located on the east coast not far from the ports of Puerto Cabezas and Bluefields, consequently what rubber is exported is easily moved to those ports. Most of the rubber is kept within the country at the present time, as the chances of its being lost are too great. Although mining is carried on in both the western and eastern sections of the country, none of the ores other than gold are exported in sizeable quantities. If it were necessary to ship any of the other minerals, the Pan American Highway could be used, especially in the western area, as it runs very near the mines.

The greater part of the financing of the Pan American Highway is borne by the United States. Large loans have been made to the Nicaraguan Government through the Import-Export Bank for highway construction and improvement. These loans have been used for the most part in the financing of the highway.

The Public Roads Administration has very direct specifications which the Pan American Highway must measure up to; these are as follows: not over 8 percent grade for distances up to 300 meters (984 feet), not over 7 percent for distances up to 2,000 meters (6,562 feet), not over 6 percent for distances longer than 2,000 meters (6,562 feet), and the minimum radius of curvature is 70 meters (230 feet).

The Pan American Highway will be paramount in its importance to the country. Economically it should aid greatly in the development of Nicaragua, and as a route for travel no other road in the country will surpass it.

The value of the Pan American Highway to the rest of the national highway system is unlimited. With such a highway the development of heretofore unoccupied sections of the country should open up, and just what the limitations are to the extent of its potentialities will remain unknown for the present.

There are no restrictions as to types of vehicles using the highway.

THE PIONEER ROAD

The term "pioneer road" as used in the following designates those stretches of highway which are to be rushed to completion as connecting links between existing points on the Pan American Highway system, and is concerned only with that part of the highway from the border between Mexico and Guatemala to the Panama Canal.

Specifications for the "pioneer road" as directed by the Public Roads Administration are as follows: the grades of the road shall not exceed 10 percent, minimum curvatures are 30 meters (98 feet), 10 foot crown and 3 foot shoulders, surfacing will consist of two 4 inch layers of gravel, or stone compacted separately, all bridges will be temporary wooden structures, and convoys will be restricted to a maximum of 35 miles per hour.

In Nicaragua the pioneer road follows the Pan American Highway from the point where it enters Nicaragua to Esteli. It diverges from the Pan American Highway route at Esteli; and runs southward through Trinidad to Sebaco. Additional construction is required on this section of the road. At the present time the Highway Department of Nicaragua is occupied with the improvement of the route from Sebaco to Matagalpa and beyond. This latter is a stretch of the Pan American Highway which is by-passed by the short cut from Esteli to Sebaco just referred to. Now being constructed is a part of the pioneer road running from the northern border to Sebaco.

South of Managua from Nandaime to where the Pan American Highway leaves Nicaragua the route of the pioneer road will follow the route of the Pan American Highway. This section of the pioneer road is yet to be constructed.

MAIN HIGHWAYS OF NICARAGUA

The highway system of Nicaragua as compared to the other Central American Republics has been very much neglected. In recent years there has been a plan inaugurated to improve the roads, especially in the western part of the country. The topography of Nicaragua has added many difficulties to the road construction program.

Managua, the capital of Nicaragua, has been practically isolated from the commercial centers of Nicaragua, due to the poor condition and lack of roads throughout the country. With the proposed improvements in Nicaragua, Managua will be in closer contact with the other cities, and as a result the country as a whole should benefit greatly.

In Table IV which follows, conditions and distances are shown for certain tributary roads which are being used at the present time.

TABLE IV

Distances Between Towns and Conditions of Road
as of December 1, 1941

Roads Roads	Distance		Condition	
	Kilometers	Miles	Kilometers	Miles
Managua-Matagalpa	131	81	Paved 24	15
Managua-Boaco	90	56	Unknown	
Managua-Diriamba	50	31	Paved 14	9
San Jorge-Rivas	4	2	Unknown	
Masaya-Diriamba	32	20	"	
Ocotal-Las Manos (Honduras) through Dipilto	27	17	"	

Atlantic-Pacific

In a report from Managua dated April 29, 1942 it is stated that the Atlantic-Pacific Highway has been opened. The highway is still regarded as a trail, and the route which it follows is very tortuous. The President of Nicaragua has plans for making this route an all weather road.

The highway from an economic point of view should be very beneficial to the country. It will serve as an outlet for commodities grown in the Atlantic area, and provide transport facilities between the two coasts through the capital. The route of the highway is as follows: from Managua the road follows the lake shore to Tipitapa; this portion, a section of the Pan American Highway, is hard finished with a bituminous surface; from Tipitapa to San Benito the road is still a part of the Pan American Highway, hard surfaced and in good condition; from San Benito the road to Rama branches to the right following a southeastern course along the foothills; the road is well improved and contains several medium sized bridges, none of which have been completed to date; seven miles from San Benito is Las Banderas, a small village near San Gabriel, a large finca owned by the President; from Las Banderas to Teustepe the road is improved except at the bridge bridges; from Teustepe the road is gravel surfaced either following the old ox trail or being cut out by tractors. This section is impassable during the rainy season, principally due to the fact that four or five streams must be forded before reaching Juigalpa; from Las Banderas toJuigalpa one range of hills is crossed. Juigalpa, capital of Chontales, is situated on a plateau; from Juigalpa the road turns east crossing another range of mountains to Santa Tomas; this mountain road is a trail barely wide enough for one car and could easily be blocked; from Santa Tomas to Pueblo Viejo the road follows the valley of the Rio Escondido across rolling and open country, no bridges are installed and the soil is of clay content; from Pueblo Viejo to Rama via Muelle de Los Bueyes the road enters the tropical region and leads northeast along a tortuous route with steep hills, sharp curves, and no bridges; this portion of the road is impassable during the rainy season, the soil is red clay with dense and impassable brush on both sides; here the road follows the old bull cart road, the road terminates at the river south of Rama and west of the Rama river; from Rama the Rio Escondido proceeds to Bluefields. Due to the President desiring the completion of this highway as soon as possible, it was constructed without a survey, a trail being completed in record time of from five to ten kilometers a day.

Length

The length of the highway is approximately 282 kilometers (175 miles) to Rama. From Rama to Bluefields by way of the Rio Escondido is approximately 88 kilometers (55 miles, making the total distance from Managua to Bluefields approximately 370 kilometers (230 miles).

San Benito-Boaco

A highway to connect San Benito, located on the Pan American Highway just slightly north of Tipitapa, with Boaco has been opened. The road runs in a northeast direction, and should be of great value as an artery for the moving of rubber and mahogany produced in that area.

The physical conditions of the road as of December 1, 1941 were as follows: The plans and surveys for the highway were about 55 percent and the grading approximately 33 percent complete. About 25 percent of the surface of the road was macadamized, the drainage had been completed, and there were five bridges which had to be built, none of which had been completed at the above mentioned date. Although not a long route, it is, due to its location, of particular importance to the remainder of the highway network.

Length

The highway is only 61 kilometers (38 miles) in length running through the two small towns of Las Banderas and Teustepe.

Santo Domingo-La Libertad

The construction of a highway from Santo Domingo to La Libertad is under way. The road is to be used mainly for the transport of rubber grown in the area, and other commodities produced nearby. Due to the heavy rainfall in this section of the country, much difficulty has been encountered. Work on the road was suspended during the rainy season. Very often some of the preliminary works were washed out completely, necessitating reconstruction. The road as of December 1, 1941 was little more than a trail, now, however, it is being surfaced with macadam. The length of the highway is only 32 kilometers (20 miles).

Bridges

Due to the numerous streams traversing the country and the heavy rainfall, it has been necessary to construct many small bridges throughout Nicaragua. Nearly all of the larger bridges are located on the Pan American Highway. Between Tipitapa and Dario there are to be many small structures, 8 of which have been completed, with several more now under construction. On the stretch of road between Dario and Matagalpa 4 bridges have been completed and 5 more are to be built. All of these bridges mentioned are on the Pan American Highway, and are to be permanent structures.

The majority of the bridges in the country are built of iron and steel with concrete surfaces; however, there are a few wooden bridges on some of the tributary roads.

On the "Pioneer Road" all of the bridges are wooden and considered as temporary only.

Some of the smaller bridges are only wide enough for a single lane of traffic, but in most cases they are designed for at least two lanes.

Many of the rivers are narrow and shallow, and traffic can ford these streams without difficulty.

All of the bridges on the Pan American Highway have a roadway of at least 20 feet, and in some cases more.

Culverts

Very little information is available regarding culverts. It is known that cement for both culvert and bridge construction is imported from the United States.

MINERALS

Gold

The mining of gold in Nicaragua has had a revival in recent years due to the price the National Bank of Nicaragua has been paying. Gold is also one of the more important exports of the country. The richest of the gold mines is the Bonanza Mine located in the Atlantic Coast region and being developed by an United States corporation. Air transportation has played an important part in the revival of gold mining by transporting equipment and supplies where there are no road connections.

Silver

Silver is the second mineral of importance, which for the most part, is recovered as a by-product of gold refining, although the country has some silver mines. In 1940 exports of silver amounted to $100,000.

Other minerals

Other minerals include limestone, which is obtained in the Department of Managua; copper, lignite, coal, iron ore, lead, and others, of which Nicaragua has small deposits which have never been seriously exploited. Petroleum has been reported to be in the country, and United States companies are drilling under two concessions.

Gold and silver are of no significant importance as strategic commodities. Copper, iron ore, and lead are of strategic value, but these minerals are obtained in such small quantities that it is doubtful if they are sufficient to be of value strategically.

REGISTRATION OF MOTOR VEHICLES IN NICARAGUA AS OF JAN. 1, 1941

With the improvement in highways of Nicaragua, motor-vehicle registration had shown a considerable increase as of January 1, 1941. In Table V which follows, the number by types of vehicle is shown.

TABLE V

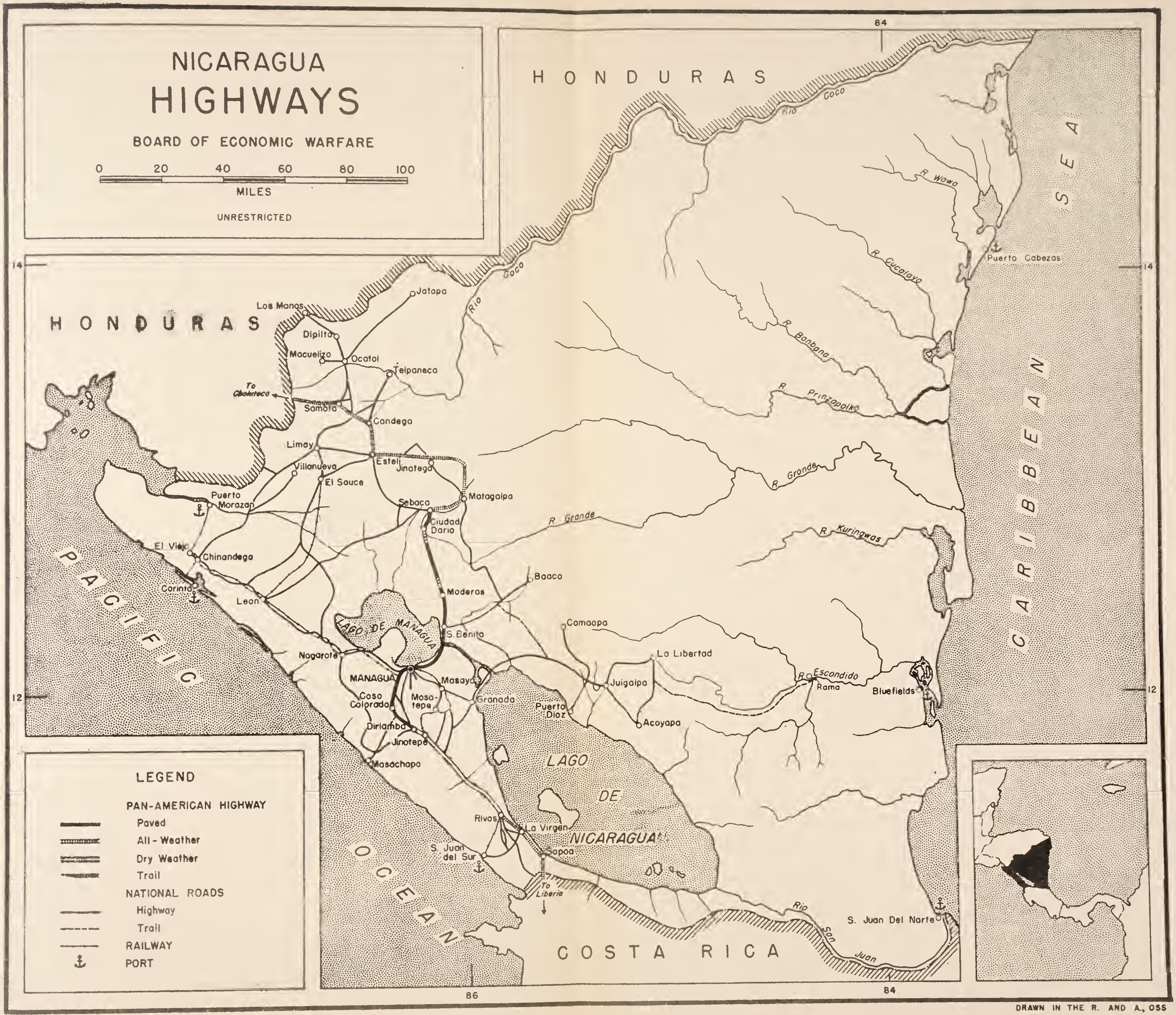
Registration of Motor Vehicles
in Nicaragua as of Jan. 1, 1941

Type	Number registered Jan. 1, 1941
Passenger cars	606
Busses	23
Trucks	268
Diesel units	10
Total all types	907

According to the American Consulate at Managua, there are no registered bus lines operating a regular service between any two cities in western Nicaragua.

There are several remodeled privately owned trucks which carry passengers between several of the Departments when roads permit.

Various small firms operate autobusses in Managua, all charging a fare of approximately five cents.



NICARAGUA
HIGHWAYS

BOARD OF ECONOMIC WARFARE

UNRESTRICTED

DRAWN IN THE R. AND A., OSS

MAP NO 1368 JANUARY 20, 1943
2-10582

THE REPUBLIC OF COSTA RICA
(La Republica de Costa Rica)

Costa Rica, next to El Salvador, is the smallest of the Central American Republics with an area of approximately 60,000 square kilometers (23,160 square miles) or about the same size as West Virginia. It is the southernmost of the 5 Central American Republics lying entirely within the tropics, with geographical extremes of 8 degrees 2 minutes and 11 degrees 13 minutes north latitude and 82 degrees 45 minutes and 85 degrees 58 minutes west longitude. Its boundaries consist of the Pacific Ocean on the west, Caribbean Sea on the East, Nicaragua on the northwest, and Panama on the southeast. The Atlantic Ocean coastline is 200 kilometers (125 miles) in length and very regular. On the other hand the Pacific shore is more than twice as long; 460 kilometers (286 miles) and it includes two peninsulas, Guanacaste (or Nicoya) in the north and Osa in the south, both of which embrace gulfs of considerable breadth. Within each of the gulfs are located a number of small islands belonging to Costa Rica. The country is in the Central Standard Time belt and has adopted it as such. The national language is Spanish, and its capital is San Jose with 66,800 inhabitants. Other important towns are: Heredia (9,431); Alajuela (9,031); Limon (8,914); Cartago (8,558); and Pintarenas (7,549).

The Costa Rican unit of currency is the colon (symbol ₡). Since 1932 official exchange control has been in effect but in practice foreign exchange is readily available. The value of the colon in foreign exchange is fixed by Banco Nacional. The rate of exchange for some time has been 5.62 colones to the dollar.

There are only two principal seaports; Limon on the Caribbean coast and Puntarenas on the Pacific. There is about 850 kilometers (528 miles) of railways, including branches and sidings, all of 1.067 meters (3.5 feet) gage. The railroads extend out from the capital, San Jose, to the ports of Puntarenas and Limon.

GEOGRAPHY AND CLIMATE

Geographical conditions in Costa Rica are determined by the Andean cordillera which extends through the country from northwest to southeast. The cordillera divides Costa Rica into 3 distinct regions, each of which contributes in a different way to the agricultural economy.

Temperatures vary with the altitude. The hot zones comprise those areas under 975 meters (3,200 feet). These lands are situated for the most part along either coast and extend to the central tableland. In this area the temperature ranges between 77 degrees and 100 degrees Fahrenheit. Rainfall is abundant, on the Atlantic side the rainy season lasts about 300 days, while on the Pacific side it extends from May to November. The chief products of these low-lying humid zones are bananas, cocoa, coconuts, gums, sugar cane, fine woods, and fruits.

The temperate zone 975 to 2,000 meters (3,200 to 6,500 feet) consists of the central plateau. In this territory the climate is healthful, with a range in temperature between 59 degrees and 77 degrees Fahrenheit, and alternate dry and rainy seasons. The majority of the population is concentrated on this plateau. Here is produced coffee (chief crop), vegetables, cereals and fruits.

Lands over 2,000 meters (6,500 feet) are in the cool zone and are even more sparsely populated than the coastal zones. Temperatures vary between 41 degrees and 59 degrees Fahrenheit and the air is dry. Spring water and waterfalls are numerous, with even the mountain tops covered with grass. Cattle for meat and milk production are raised while fruit and vegetables are produced on a minor scale.

GOVERNMENT

During its existence as an independent nation, Costa Rica has had 6 constitutions, adopted in the years 1825, 1847, 1859, 1869, and 1871. The last which was abrogated for a while, was readopted in 1882 and is still the fundamental law of the land.

The government is unitary in form, that is all power is inherent in the national government with all power exercised by provincial or local bodies derived from the former. The national government with its seat at San Jose is divided into legislative, executive and judicial. There are 7 provinces each administered by a governor appointed by the President. The provinces are divided into cantons, and the latter into districts.

As in all the other Central American countries, except Nicaragua, legislative power is vested in a single chamber. The Congress is composed of 43 members elected directly by the people of the various provincial constituencies for a 4-year term; members may be reelected indefinitely, with half the membership being retired every 2 years. Deputies must be either native-born or naturalized citizens, the latter of 4-years standing. They must be literate, over 21 yesrs of age, possessed of property valued at 500 colones or have an annual income of 200 colones. The powers of Congress are to enact all laws, levy taxes and make appropriations, impeach all public officers before the Supreme Court, declare war, determine the size of the armed forces, fix the value of the currency, authorize the negotiation of loans, and by a two-thirds vote suspend certain civil liberties guaranteed by the constitution.

The executive power is vested in a President; should the President resign or in any way become incapacitated, his place is taken by one of 3 designates named by the Congress at the beginning of the Presidential term. The President is elected by a direct vote of the people, for 4 years. He is empowered to: appoint and remove all executive personnel, including cabinet members and diplomatic representatives, negotiate treaties and agreements with foreign nations subject to the consent and ratification of Congress, declare war when authorized by Congress, grant pardons, reprieve and amnesty, command the armed forces, maintain domestic order, and suspend certain civil liberties in the absence of Congress. Should he suspend any civil liberty the Congress must immediately convene and ratify or override the action. The President must be a native-born citizen, secular, literate, over 30 and have the same property qualifications as deputies.

For validity all presidential orders must be signed by the cabinet officer under whose jurisdiction they come. Cabinet members meet as a body but have advisory powers only. Individual members are permitted to sit in Congress where they may take part in debate and introduce bills but they may not vote. The following departments constitute the executive departments: Relaciones, Exteriores

Justicia, Gracia y Culto (Foreign Affairs, Justice and Worship); Gobernacion, Policia, Trabajo, Prevision Social y Seguridad Publica (Interior Police, Labor, Social Welfare and Public Safety); Hacienda y Comercio (Finance and Commerce); Fomento y Agricultura (Development and Agriculture); Educacion Publica (Public Education); and Salubridad Publica y Proteccion Social (Public Health and Social Hygiene).

Judicial power is vested in an independent Supreme Court (Corte Suprema de Justicia) and in the lower courts established by law. The Supreme Court is composed of 4 subordinate parts. When the court sits with its full membership (11), it is known as the full court (corte plena) and has the power to declare laws and decrees unconstitutional. The other 3 parts are known as the Chamber of Appeals (sala de casacion) with 5 Justices, Civil Chamber (sala civil) and the Criminal Chamber (sala penal), the last 2 having 3 Justices each. The three branches hear distinct classes of cases, largely appeals, with the sala de casacion reviewing conflicts between the others. Justices of the Supreme Court are chosen by the Congress for a 4-year term beginning at the midpoint of the presidential term and must have certain qualifications as to age, citizenship, profession, and property. Judges of the lower courts are appointed by the Supreme Court sitting in plenary session.

Among the personal liberties guaranteed by the constitution is a Bill of Rights. Among the guarantees are equality before the law, freedom of speech, religion and press, right to petition and peaceable assembly, irretroactivity of the laws, baheas corpus, prohibition of unreasonable search and seizure. Suffrage is universal for all male citizens over 20 years of age (18 if married) who are able to support themselves and are inscribed in the Civil Register. Voting for all officials is secret and compulsory. Even before voting was compulsory two-thirds of the eligible voters exercised their franchise rights regularly.

POPULATION

On December 31, 1939, the population of Costa Rica consisted of 639,197 inhabitants, if compared with the previous census of 471,524 inhabitants recorded in 1927, it represents a 35 percent gain in 12 years. The average density is 28 persons per square mile or about that of Florida. About 80 percent of the people belong to the white race. The next largest group is that of Mestizos (mixed white and Indian) with about 14 percent, the third largest group are Negroes with about 4 percent, and the rest is made up of pure Indian stock. The Negroes, who are chiefly immigrants from the West Indies, all live in the Province of Limon on the Atlantic coast where they work on the banana and cocoa plantations.

The population is concentrated in the central plateau especially around San Jose, because of the equable climate in this region as contrasted with the high and humid temperatures prevailing in the coastal areas. Estimates have it that 75 percent of the population is concentrated in the central meseta or tableland. Heredia, Cartago and Alajuela are next in importance to the capital, San Jose, within a short distance of it, and at approximately the same altitude, while the only important coastal cities are the seaports of Limon and Puntarenas.

INDUSTRY

Agriculture is the basic economic activity of the people of Costa Rica. Because of its agricultural character most manufacturing establishments are based on agriculture. Mining and manufacturing are but slightly developed, and most of the people indirectly or directly, depend upon the raising of subsistence crops for home consumption or money crops for export. The most important crops are coffee, bananas, and cocoa, which together form 85 percent of the total exports. The most important crop is coffee which makes up about half of the total exports. It is grown in 6 of the 7 Provinces, the sole exception being Puntarenas. The total number of coffee fincas is about 25,477. There are about 150,000 people living on the coffee plantations, or about one-fourth of the entire population.

Bananas rank second to coffee as an export product and prior to World War II accounted for 20 to 25 percent of the total export values. They are cultivated chiefly on the Atlantic Coastal plains and the greater part of the harvest was bought in the past by the United Fruit Company, which itself has large plantations there. About 80 percent of the crop was exported to the United States the balance going to Canada, Germany, and the United Kingdom.

Cocoa has been raised in Costa Rica for centuries. In 1914, the practice of replanting exhausted banana lands with cocoa trees was adopted. At present about 30,000 hectares (74,131 acres) are under cultivation. Except for a small area on the Pacific coast, where irrigation is required, all plantations are located in the lowlands adjacent to Limon on the Atlantic side. Cocoa contributes a substantial amount to the export trade. Exports in 1939 reached a high figure of 7,672 metric tons as compared with an average of 6,034 tons for the preceding 5 years.

Other agricultural crops are sugar cane, corn, beans, rice, potatoes, tobacco, and garden vegetables. In 1937 about 25,500 hectares (63,011 acres) were planted to sugar cane, chiefly in the Provinces of Alajuela and Cartago. Production of sugar in that year was 10,859 metric tons and of ponela (a course brown sugar cake) 22,594 tons. A large variety of tropical and temperate zone fruits are produced, including pineapples and oranges, some of which are exported

Although the largest forest areas occur in the Atlantic region, exploitation of lumber is confined to stands on the Pacific side. Cedar is the principal wood exported; guayacan, mahogany, fustic, cocobolo and balsa have also been shipped in the past. Rubber is of some importance and has been exploited since 1936 on the Atlantic Coast; exports in 1939 totaled 53 metric tons. Undoubtedly the importance of rubber has increased tremendously since the United States entry into the war.

The cattle industry is limited to the Guanacaste peninsula, and in 1939 ther were 331,142 cattle; with a total of 46,487 slaughtered, of which 7,648 were imported, hogs slaughtered in the same year numbered 50,442.

Gold is the only important mineral deposit mined, and its exploitation is confined to the Pacific coastside. Gold exports in 1939 were 6 percent of total exports by value. Deposits of silver, manganese, mercury, sulphur and petroleum have been reported, exploitation of manganese in the Province of Guanacaste havin been undertaken during the last few years. In 1938, 304 metric tons of manganese ore was exported and with the increased demand due to the war tonnage has increas

Since Costa Rica is principally an agricultural country, as a consequence most of the manufacturing industry is based on agriculture. Those major industries are coffee processing, sugar cane milling, preparation of cacao, and the manufacture of wool products. Other industries manufacture such articles as textiles, shoes, leather goods, starch, soap, candies, candles, beer, cheese, cigarettes, brooms and furniture, all for use in the domestic trade. In 1939, there were 2,916 industrial establishments, which included 190 coffee cleaning plants, 87 plants for grinding coffee and cacao, 63 rice mills, and 118 sawmills. There are also a number of enterprises engaged in making hand-sewn shoes and a few other small industries not included in these figures. Hydroelectric power nationalized since 1928 is used extensively for motive power in manufacturing.

IMPORTS AND EXPORTS

Along with other Latin American countries, Costa Rica is dependent for economic prosperity on foreign trade. Most of the agricultural products are exported while most of what the people consume is imported. As mentioned previousl coffee is the most important export accounting for 51 percent of the total in 1939, bananas 21 percent, and cocoa 13 percent. Imports consist largely of finished manufactures, particularly machinery and metals, textiles, foodstuffs, and fuels. In 1939 the total imports amounted to $16,884,962. The United States is the main supplier of Costa Rica's imports and the leading buyer of its exports Of imports by value in 1939, 58.8 percent came from the United States, 17.7 percent from Germany, 6.2 percent from Japan, 3.9 percent from the United Kingdom. As regards exports, 45.6 percent went to the United States, 25.1 percent to Germany and 16.9 percent to the United Kingdom. Imports and exports in 1939 in the order of their importance are: imports - cotton goods, iron and steel other than machinery, flour, mineral oil, motor cars and trucks, and silk goods; export coffee, bananas, cacao, gold and silver bullion, timber, hides and skins, honey, fruit and vegetables. In Table I is presented the trend of foreign commerce by value for the years' 1936 through 1940.

Table I

Foreign Commerce, 1936-1940
(In U. S. Dollars)

Year	Imports	Exports
1936	8,397,135	8,309,256
1937	11,878,547	11,512,097
1938	12,620,721	10,145,614
1939	16,884,962	9,086,498
1940	16,840,463	7,483,957

CONCLUSION

Due to its proximity to the Panama Canal, Costa Rica is strategically locat Costa Ricans have taken advantage of this point in their bid for funds from the United States Government for development of highways, and this has not been without justification because they are very much in need of financial assistance in exploiting their undeveloped potentially rich resources.

The opening of the Pan American Highway will give a north-south means of egress and ingress to the meseta (central plateau). The only means of transportation out from the meseta now in existence is that provided by the railroads from San Jose to Puntarenas and Limon. Recently there has been considerable apprehension that service on the Northern Railway operating between San Jose and Limon would be interrupted altogether by a landslide or the washout of a bridge. Congestion on the electric line running from San Jose to Puntarenas has reached the critical stage. Public press propaganda has been agitating for the construction of an interocean highway as a military necessity since a successful bombing attack on the bridges and cuts of the railroads or sabotage of the electric plants of the Pacific Railway would isolate the chief cities of the Republic except for air transportation.

Inadequate transportation has been a major obstacle to the economic exploitation of the country. Ox carts have been the only means of transportation in most areas, and it is costly and slow. The high cost of transportation is reflected in the price of goods to the ultimate consumer, for example these items were at prices, if procurable, at all in Buenos Aires in 1933: Crackers, $3 a 2-pound box; can of pears, 75 cents; oatmeal, 50 cents a pound; can of evaporated milk, 45 cents.

Great are the economic possibilities with the development of a good highway system. Cattle could be hauled in over the Pan American Highway to the city of San Jose. At present an ocean journey is necessary, with passage through 2 custom stations and transfer from land vehicle to coastwise vessels at 2 points. Trucking through from Nicaragua over the highway would eliminate this circuitous route and greatly reduce the cost of meat to consumers in San Jose. Highway transportation would hasten the development of the tobacco lands in the El General area. Completion of the Inter American Highway will enable Costa Ricans to sell vegetables and fruits of all sorts to residents of the Panama Canal Zone and to ships passing through the Canal. Better roads throughout the nation would facilitate the movement of these products throughout the country. Reliable authority has stated that a good highway system in Costa Rica would make the country self-sufficient in these commodities; grain, roots and tubers, and green vegetables. In conclusion it can be said that the completion of the Inter-American Highway will improve the economic relations between the Central American countries and consequently the political relations. With the curtailment of coastwise shipping it will be a great economic blessing to them.

THE HIGHWAYS OF COSTA RICA

All the improved roads in Costa Rica are located on the meseta (central plateau) and for all practical purposes there are no highways leading down to either ocean. Auto vehicles for use in the capital, San Jose, or other central cities must be shipped in by rail. However, since the outbreak of hostilities between the United States and the Axis powers considerable agitation has been evident for the extension of the highway system to the Pacific port of Punterenas and the Caribbean port of Puerto Limon. Nevertheless, considerable progress has been made in recent years in extending highway mileage in Costa Rica. The introduction of automobiles, trucks and busses, has had considerable influence on road improvement, to such an extent that highways are now an important factor in the transportation system of the country.

In 1940, there were about 3,000 kilometers (1,864 miles) of roads including those throughout the coffee and banana districts, mainly used to transport these commodities to the railway. Of this total 653 kilometers (406 miles) are improved, the balance of the mileage consisting of the unimproved type, commonly known as trails. In contrast with this, statistics for 1942 show that 910 kilometers (565.42 miles) of highways were in the improved class. Table II shows the length of the various types of roads.

TABLE II

Highway Lengths by Construction Types - 1942

Type	Length Kilometers	Miles	Percentage
Unimproved earth and non-surfaced	none	none	none
Improved earth, sand, clay, gravel, etc.	207	128.62	23
Waterbound macadam	277	172.11	30
Macadam, surface treated and penetration	333	206.91	37
Bituminous concrete and asphalt	none	none	none
Cement concrete	93	57.78	10
Block stone, wood, asphalt, and brick	none	none	none
Not specified	none	none	none
Total	910	565.42	100

MAIN HIGHWAYS

The principal highway is the Carreterra Central (Central Highway) which runs from Cartago, in the east, through San Jose, Heredia, Alajuela and Naranjo to San Ramon in the west, a distance of about 100 kilometers (62 miles). In October 1941, the road was being extended further east to Turrialba which is about 34 kilometers (21 miles) away; hope is high that it will be eventually extended to Puerto Limon, although a survey has not been made. It is also planned to build the road west to Puntarenas but this is not contemplated at the present. From San Jose highways connect with Heredia, Alajuela and Grecia.

All the roads in the country connect up with the Carreterra Central at some point. The Inter-American Highway when completed will intersect this highway in the northwest at Narango and at Cartago in the southeast.

Table III shows the extensions of the various roads connecting up the central highway system. These roads are all hard-surfaced (cement, macadam or asphalt) but there are some short stretches of gravel and graded road.

Table III

Connecting Roads of Central Highway System - 1941

	Length	
Cities and Distance from Starting Point	Kilometers	Miles
San Jose-Heredia (10), Alajuela (22), Cucao (36), Grecia (41), Narango (55), Palmares (70) San Ramon	76	(47)
San Jose-Tres Rios (10), Cartago (22) Paraiso (31) Cervantes (37) Santiago (42) Juan Vinas (46) Turrialba	56	(35)
Heredia-Barba (3), Vara Blanca, (40), Poas Volcano	56	(35)
Cartago-Cot (8), Sanatorio Duran (16), Irazu Road (49), Irazu Summit	55	(34)
San Jose-Escasu (6), Santa Ana (14) Villa Colon (20) El Rodeo	26	(16)
San Jose-San Isidro Coronado (11), Las Nubes	17	(11)
Santo Domingo-San Antonio (12), San Rafael	15	(9)
Paraiso-Orosi (6), Tapanti	14	(9)
Cacao-La Garita	13	(8)
Naranjo-Zarcero	13	(8)
San Jose-Tibas (3) Santo Domingo (7) Heredia (10)	10	(6)
Cot-Pacayas	10	(6)
San Jose-Desamparados (3) Aserri (9)	9	(6)
Paraiso-Ujarras (3) Cachi (9)	9	(6)
Cacao-San Pedro de Poas	7	(4)
Cargago-Concepcion (4), Tobosi	7	(4)
San Jose-San Francisco (3) Curridabat	6	(3)
Cot-Santa Rosa	6	(3)
Tibas-Moravia (4), Guadalupe	5	(3)

Table III (Continued)

Connecting Roads of Central Highway System - 1941

Cities and Distance from Starting Point	Length Kilometers	Miles
San Joaquin-Santa Barbara	5	(3)
Santo Domingo-San Isidro	5	(3)
San Jose-Alajuelita	4	(2)
Various shorter branches	42	(26)
Atenas-Rio Grande	6	(4)
San Mateo-Orotina	4	(2)
Piedras Negras-Turrucares	5	(3)
Total improved surface roads on the meseta	481	(299)

The last three named roads connect three large villages with the Pacific Railroad, but are yet to be linked up to the other government roads on the central plateau.

Besides the roads shown in Table III above there are about 100 kilometers (62 miles) of improved dirt roads on the meseta (central plateau), most of which were constructed in 1940. It was estimated in September 1941, that the overall highway system consisted of about 600 kilometers (373 miles) of good roads not inclusive of city streets. There are no roads in the Pacific coastal area which are passable to motor vehicles. The Guanacaste Province does not have any good roads. The best routes are still in the trails classification.

Highway conditions along the Atlantic Coast are some better. In June 1940 the Ministry of Fomento reported that there were 10 kilometers (6 miles) of macadam road in the Province of Limon, but there was no hard surfaced road extending very far beyond Puerto Limon. In September 1941, these roads were under construction on the Atlantic slope; 35 kilometers (22 miles) of dirt road between Santa Cruz and Linea Vieja, from Turrialba to the Rio Reventazon, 7 kilometers (4 miles) of hard surface. At this time (September 1941) there was a passable dry weather trail between Turrialba and Siquirres, and it was hoped to improve it further and to build a bridge over the Reventazon. The road to Linea Vieja was not open all the way but all the bridges were in.

Highways Useful to War Effort

In Table IV are listed traffic arteries which could be used to transport war materials and further the economic development of the country.

TABLE IV

Highways Which Can Carry War Materials - 1942

Termini	Type of Construction	Length	
		Kilometers	Miles
1) Turrialba-Santa Cruz	Macadam, surface treated	14	8.69
Juan Vinas-Turrialba	" " "	12	7.45
1) Paraiso-Juan Vinas	" " "	22	13.67
Tapanti-Paraiso	" " "	17	10.56
Cartago-El Empalme	" " "	23	14.29
1) Ipis-Tierra Blanca	" " "	22	13.67
San Jose-Volcan Irazu	Cement concrete	55	34.17
San Jose-Ojo de Agua	Macadam, surface treated	21	13.04
San Jose-Las Nubes	" " "	17	10.56
San Jose-Santana	Cement concrete	20	12.42
San Jose-Volcan Poas	Macadam, surface treated	56	34.79
San Jose-Villa Colon	" " "	20	12.42
San Jose-San Pedro Poas	" " "	34	21.12
Alajuela-Grecia	" " "	21	13.04
Grecia-Naranjo	" " "	14	8.69
Naranjo-San Ramon	" " "	21	13.04
1) Aserri-Acosta	" " "	19	11.80
1) Villa Colon-Puriscal	" " "	21	13.04
Naranjo-Villa Quesada-	" " "	40	24.85
1) Villa Quesada-La Marine	" " "	11	6.83
1) Quebradas-San Pedro T	" " "	13	8.07
San Jose-San Sebastian	" " "	7	4.34
San Jose-Pavas	" " "	3	1.86
San Jose-San Josesito	" " "	5	3.10
Nicoya-Puerto Jesus	" " "	22	13.67

1) Under construction

All the roads listed above, with the exception of Nicoya-Puerto Jesus, connect with the capital (San Jose) forming an important part of the national highway system. Generally crushed rock is used as a base for roads in Costa Rica, with the width varying between 3.5 and 4 meters (11.5 and 13 feet). The roads shown in Table IV are in the all weather category, 47 percent having paved surface, the balance being improved earth and waterbound macadam. Exact figures are not available as to mileage of trails in Costa Rica, however, an estimate obtained from the Department of Roads and Bridges puts the total at 5,000 kilometers (3,106 miles). Most of these trails are not fit for motorized travel, since they are not connected with the main road system.

All roads used for automobile traffic are adequate for two-way traffic. There are no viaducts or underpasses in Costa Rica. Important bridges in the country are described in Table V.

TABLE V

Important Bridges in Costa Rica - 1943

Name of bridge and stream	Location	Material	Span (length)	Width
Puente del Virilla	on Virilla River San Jose-Heredia road	Concrete	50 meters	5 meters
Palomo Nuevo on Reventazon River	Orosi-Tapanti road	Masonry	70 "	3.07 "
Rio Macho on Macho River	Orosi-Tapanti road	Rigid steel	30 "	5 "
Jabillos - San Carlos River	San Carlos-Villa Quesada road	Iron	30 "	3.25 "
La Vieja Abajo on San Carlos River	San Carlos-Villa Quesada road	Concrete	---	3.50 "
Maria Aguilar on Maria Aguilar River	San Jose-Alajuelita	Concrete	---	5 "
San Luis de Turrubares on Turrubares River	San Pedro-San Luis de Turrubares	Wooden	17 "	3 "
Puente Holanda-Cascajal	Holanda-Cascajal	---	5 "	3.50 "
Bridges Pedregal and Perez Zeledon	---	Timber	14 "	3.20 "
San Francisco de Moravia	Moravia-Los Sitios	Reinforced concrete	---	---
Pacaca - on Villa Colon Highway	San Jose-Villa Colon	Iron and wood	---	4 "
Boca del Infierno	San Jeronimo and Carrillo road	Iron and wood	19 "	1.75 "
Rio General on General River	---	---	32 "	3.20 "
Picagres	Picagres-Piriscal road	Iron and wood	5 "	3.20 "

Highways and Bridges Constructed During 1941

The Director General of Roads and Bridges announced that the highway construction presented in Table VI was done in 1941.

Table VI.

Roads Built in 1941

Province	Concrete		Loose Stone		Asphalt		Macadam		Total	
	km.	mi.	km.	miles	km.	mi.	km.	mi.	km.	miles
San Jose	--	--	27.72	(17)	1.12	(0.6)	6.33	(4)	35.17	(22)
Alajuela	--	--	23.75	(15)	16.00	(10)	25.57	(16)	65.32	(40)
Cartago	6.80	(4)	18.62	(12)	11.73	(7)	16.50	(10)	53.65	(34)
Heredia	--	--	22.46	(14)	.65	(0.4)	12.67	(8)	35.78	(22)
Guanacaste	--	--	6.00	(4)	--	--	--	--	6.00	(4)
Puntarenas	--	--	.50	(0.3)	--	--	--	--	.50	(0.3)
Limon	--	--	.74	(0.4)	--	--	--	--	.74	(0.4)
Total km.	6.80		99.79		29.50		61.07		197.16	

In 1941, 78 bridges were built on the various provincial roads as follows: San Jose, 20; Alajuela, 17; Cartago, 23; Heredia, 8; Guanacaste, 7; Limon, 3.

The year 1941 was a banner year as it concerns highway construction to Costa Rica. More roadwork was done in this year than in any previous year of the country's history. Estimates in June 1942 promised that 1942 and 1943 would surpass 1941 if the materials and supplies arrive.

Projection of Roadwork

In June 1942 the Ministry of Fomento announced that it hoped to construct those highways shown in Table VII, by May 1943.

Table VII.

Tributary Roads Under Projection

Termini	Extension	
	Kilometers	Miles
Taponti-Paraiso	17.00	10.6
Juan Vinas-Paraiso	13.50	8.38
Villa Colon-Puriscal	21.50	13.36
Aserri-Acosta	18.00	11.18
San Jose-San Francisco de Dos Rios	1.80	1.11
San Jose-Paso Ancho	1.50	0.93
San Jose-Pavas	3.70	2.23
Itiquis-San Isidro de Alajuela	1.50	0.93
San Francisco de Dos Rios-El Zapote	1.50	0.93
San Jose-Curridabat	3.90	2.42
Nicoya-Puerto Jesus	22.00	13.67
Colima- lorente	3.80	2.36
San José-San Sebastian	7.50	4.66

Table VII (Continued)

Tributary Roads Under Projection

Termini	Extension Kilometers	Miles
Moravia-San Pablo de Heredia	8.80	5.47
San Jose-Alajuelita	4.70	2.92
Villa Quesada-Pitral	31.60	19.64
Turrialba-Santa Cruz	13.80	8.57
Vista de Mar-Tierra Blanca	22.70	14.10
Cuebradas-San Pedro de Turrabares	12.80	7.95
Naranjo-Villa Quesada	45.00	27.96
Total	256.60	159.38

The Tapanti-Paraiso road will run from Paraiso in a generally south southeasterly direction, descending from the plateau to the Reventazon river, continuing up the valley of the Rio Grande. The highway will pass through the village of Orosi, where is located the oldest church in Costa Rica which has been in continuous use since colonial times. The National Tourist Board has been agitating for the reconstruction of a short loop line from Paraiso to the ruins at Ujarias, Cacho and back to Orosi. However, there isn't any likelihood that this will be taken up at present.

The Juan Vinas-Paraiso highway will be a part of the so-called "interocean highway" which has been proposed and will parallel the railway extending from Puntarenas to Puerto, Limon. Work on it is almost complete; the most difficult portion is finished, that is the cut along the mountain side between Quebrada Honda and Cervantes. It was anticipated that the entire length would be ready for traffic in December 1942.

The Villa Colon-Puriscal road will follow in general the ridges of the El Cedral and Puriscal mountains in a west southwesterly direction. The road is hard surface from the capital to Villa Colon with the exception of a short stretch out of Piedades; a branch road runs to El Rodeo, mostly used by tourists.

The Aserri-Acosta road, which runs southwest from the capital was completed in June 1942 but for hard surfacing at the northern end. It follows the mountain ridges after reaching a height of about 2,200 meters (7,217 feet) providing a splendid view of San Jose and the slopes of Irazu. A good deal of traffic passed over the road during the 1942 dry season.

The San Jose-San Francisco de Don Rios section and the extensions from San Francisco de Don Rios to El Zapote and Curridabat will be part of the network of good roads joining the capital with its suburbs. These three ports are southeast of the city; there has been much agitation of late for their improvement, and it has been said that the El Zapote road is one vast quagmire.

The San Jose-Paso Ancho road will lead directly south from the capital, and the San Jose-Pavas highway takes a westerly course from the city. The Pavas road passes by the airport and follows the north side of the Sabana River. The San Jose-Alajuelita and San Jose-San Sebastian are 2 suburban roads to the southwest and southeast, respectively.

The Itiquis-San Isidro will be a further extension of the stretch of road constructed to the north of the city of Alajuela.

The Hicoya-Puerto Jesus highway was the first to be modernized in the Province of Guanacaste and joins Nicoya with its port on the inlet of the gulf of the same name.

The Vista de Mar-Tierra road, when it is completed will be a back road from the capital to Cartago. Vista de Mar is already connected with the cement road between San Jose to Las Nubes at the village of Ipis. The road to Tierra Blanca follows the windings of the southwest slopes of the volcano Irazu.

The Quebradas-San Pedro de Turrubares will not connect with any other highway. It will run due south from a station on the Pacific Electric Railway across the valley of the Rio Grande de Tarcodes.

The Turrialba-Santa Cruz road ascends from the valley Turrialba to a considerable height up the slope of the volcano Turrialba to the northward. The Naranjo-Villa Quesoda is part of the northern section of the Inter-American Highway.

In addition to the tributary roads shown in Table V as under projection, consideration was being given to the building of a highway from Dominical Point on the Pacific to San Isidro el General. Intentions were to begin construction in January 1942, in order to provide a ready means of transporting road construction machinery from the coast into the valley. If road building machinery could be brought in by this means it would have enabled construction to be carried on in both directions from San Isidro on the Inter-American Highway in addition to the work carried out on the highway in a southeastern direction from Cartago.

Legal Restrictions

The narrowness of the roads has always been a major difficulty in Costa Rica Prior to January 24, 1942 no regulations existed as to maximum vehicular size, but on that date the regulations presented in Table VII were promulgated on the limitation in size of bus bodies.

Table VIII

Maximum Permissible Bus Dimensions

(promulgated Jan. 24, 1942)

	Rear wheels with single tire	Rear wheels with double tire
Maximum width of body	2 meters (6.56 feet)	2.2 meters (7.22 feet)
Width of passage between seats	25 centimeters (0.82 feet)	25 centimeters (0.82 feet)
Width of seat per passenger	38 centimeters (1.25 feet)	38 centimeters (1.25 feet)
Distance between seats back to back	66 centimeters (2.17 feet)	66 centimeters (2.17 feet)

Maximum permissible length of body must not exceed one and one-half the distance between axles. It is reported that since all bus bodies are built in the country and placed on imported chassis, all present busses will be replaced by equipment with the above limitations.

Extent of Motor Vehicles used in General Transportation

As a result of the small mileage of railway track in Costa Rica, transportation service is largely supplied by trucks and busses. Trucks serve in a large measure as rail feeders. The number of trucks (1,102) and busses (435) is large as compared with the total mileage of highways fit for motor traffic.

Shipping by Highways versus Railways

There are only two important railroads, and they span the country from the Pacific to the Atlantic Ocean, connecting at San Jose, the capital. The Ferrocarril al Pacifico, electrified and Government owned, operates between the Pacific port of Puntarenas and San Jose, the other line runs between San Jose, and Limon, the Atlantic Coast port, and uses oil burning locomotives.

Inasmuch as a road between San Jose and Puntarenas would reduce the revenue and eventually render useless the Ferrocarril al Pacifico railroad the Costa Rican Government has not lent any encouragement to such a project. No highway at all exists between San Jose and Port Limon because the Costa Rican Government has agreed not to permit any competition with the Northern Railroad Company. An earthern road exists between the two points, but it is passable only in the dry season and even then with great difficulty. Due to the torrential rains along both coasts in the rainy season the maintenance of a road would be extremely difficult. Then, too, the climb from the coasts to the Meseta Central would require a highway whose costs would be extremely high due to the difficult terrain.

Railway transportation would be cheaper than highway transportation even if highways were built, since the railways have been operating over 30 years and much of the original cost has already been absorbed. The railroads are essential in that they transport all imports and exports to and from San Jose to the ports of Limon and Puntarenas. Nevertheless, the highways are necessary for concentrating the exports at San Jose for shipment by rail to the ports, as well as being an absolute necessity for the distribution of imports to the Meseta Central wherein reside 2/3 of Costa Rica's population.

PAN AMERICAN HIGHWAY

The Public Roads Administration has allocated $6,000,000 for construction of roadbed in Costa Rica during the dry season beginning in December 1942. In this sum is included an item for 2 bridges. Each bridge it is estimated will cost about $100,000. They will be over the El General and Braus rivers, each between 60 and 70 meters (197 and 230 feet) in length of the steel truss type span. The steel truss is necessary because each stream becomes very deep and swift in the wet season and considerable debris comes down the river which would pile up against a trestle type of bridge.

The total length of the Pan American Highway in Costa Rica is 599 kilometers (372 miles). From the Panama border to San Isidro del General it is 135 kilometers (84 miles) with an existing trail. The U. S. Army Engineers are constructing a pioneer road, the work being done under contract. All permanent drainage structures on this stretch will be constructed under the supervision of the Public Roads Administration, as a cooperative project. From San Isidro del General to Nivel a distance of 45 kilometers (28 miles) the route is also trail. The contract has been awarded for the construction of this stretch according to Modified Inter-American Highway Standards. The stretch between Nivel and El Empalme is also trail, 50 kilometers (31 miles) in length, and is likewise to be constructed according to Modified Inter-American highway Standards. The contract will be let when Lend-Lease funds are made available. The road between El Empalme and Cartago is dry weather surface, 29 kilometers (18 miles) in length and is now under construction according to Inter-American Highway Standards. The only paved part of the Inter-American Highway in Costa Rica is the section between Cartago-San Jose-Zarcero stretching for 100 kilometers (62 miles). The highway from Zarcero to Los Canas consists of 115 kilometers (71 miles) of trail and it is not probable that any construction will be done on this section of Inter-American Highway in the immediate future. The U. S. Army Engineers are doing some pioneer road work in this stretch and it is contemplated to build by way of Navanjo and San Ramon to Las Canas. If the Inter-American Highway location is changed to follow the route of the "pioneer road" through this section, and it is very probable that it will be changed then the permanent drainage structures will be built under the supervision of the Public Roads Administration. The remainder of the highway from Las Canas to the Nicaraguan border has a total extension of 155 kilometers (96 miles); from Las Canas to Liberia it is a trail, total length 47 kilometers (29 miles), and from Liberia to Nicaraguan border there is 78 kilometers (48 miles) of dry weather road. The entire section from Las Canas to the

Nicaraguan border is being constructed by the U. S. Army Engineers under contract and the permanent drainage structures are being built by the Public Roads Administration as a cooperative project with the Government of Costa Rica.

The War Department expects to spend between 7 and 7½ million dollars on pioneer road projects in Costa Rica. Two contracts have been entered into by the U. S. Engineers on cost plus a fee basis. One of the contracts covers the section between Volcan, Panama and San Isidro del General, Costa Rica, and between Concepcion and David, Panama, the tota l cost of which is estimated at $4,500,000 exclusive of the fee. The total length of the construction work in Panama is 65 kilometers (40 miles), the estimated cost of which $1,500,000. The northern contract consists of the section between Zarcero and the Nicaraguan border a total distance of 282 kilometers (175 miles), the total cost of which is estimated at $2,600,000 exclusive of fees. (For location see paragraph above). In the stretch between the two contracts $800,000 has been allotted to the Public Roads Administration for construction of highway and bridges. The agreement on the expenditure of this sum is that permanent way and structures will be installed, unless their installation will cause delay, and in that event temporary structures will be installed.

Transportation of Strategic Materials

The objective in pushing the pioneer road through is to provide a military road for the defense of the Panama Canal. Such a road will provide a strategic highway for the land transportation of supplies from the United States to the Panama Canal Zone. The Institute of Interamerican Affairs, Food Division, has under way a project for the production of 13 different types of American vegetables, with which it is hoped to supply Army and Civilian personnel in the Canal Zone. Trucks will be used to transport these foodstuffs, and the central shipping points as soon as the road is open to traffic will be Cartago and San Jose. Other strategic materials can be shipped to Panama over this highway, particularly balsa and rubber. Ocean shipping facilities are more readily available in the Canal than in either Limon or Puntarenas due to the vulnerability of these two ports to submarine attacks.

Importance of Pan American in National Highway System

It is anticipated that the Pan American Highway will open up vast virgin timber lands, that is about 900,000 hectares (2,223,939 acres) with a value between 4 and 6 million dollars. Even though the United Fruit Company bought up extensive tracts of land to plant bananas in the Pacific area it is estimated that there are 2,000,000 hectares (4,942,088 acres) of virgin land still available for agricultural purposes. The southern section of the country from the province of Cartago to the Panamanian border has extensive tracts of uncultivated land all belonging to the Costa Rican Government. The Pan American Highway will open up about 607,000 hectares (1,500,000 acres) in this area. In the northern part of the country there is an expanse of land between the Central Mountain range, the Nicaraguan border, and the Caribbean Sea consisting of 890,000 hectares (2,199,229 acres) of very fertile soil. Since the Pan American Highway extends the entire length of the country, from north to south it is anticipated that it will eventually serve as a starting point for many roads which can be constructed by the Costa Rican Government into these uncultivated lands which lie east and west of the highway. Appraisers have estimated that these lands will increase in value from 70 to 140 colones a hectare.

PLANNING AND FINANCING

Roadwork is under the jurisdiction of 3 different agencies in Costa Rica, that is the U. S. Public Roads Administration, U. S. Engineers, and the Costa Rican Government itself. In the Costa Rican Government road construction is under the direction of the "Direccion General de Caminos y Puentes" (Bureau of Roads and Bridges), under the Ministry of Agriculture and Public Works. U. S. Public Works Administration activities are confined to the Pan American Highway and activities of the U. S. Engineers is confined to putting the "pioneer road" through.

Expenditures, Construction and Maintenance

Table IX gives the expenditures for construction and maintenance of roads and bridges for 1937, 1938, and the first 4 months of 1940. The source of this information is the Inter-American Highway Commission in San Jose.

Table IX

Expenditures on Highways, 1936-1940
(in colones)*

May 1936 to May 1940

PROVINCE	ROADS		BRIDGES		MACHINERY	TOTAL
	Construction	Maintenance	Construction	Maintenance		
San Jose	1,522,831.79	478,829.17	143,421.97	134,369.00	---	2,279,451.93
Heredia	2,086,306.71	107,250.48	92,233.91	26,810.23	---	2,312,601.33
Cartago	1,627,277.24	184,985.11	652,309.44	25,456.26	---	2,490,028.05
Alajuela	3,404,084.66	663,499.18	577,505.01	42,741.27	---	4,687,830.12
Puntaarenas	153,114.78	51,628.96	96,054.89	12,574.28	---	313,372.91
Limon	85,420.61	8,436.67	---	17,487.13	---	111,344.41
Guanacaste	319,274.23	287,531.45	297,946.31	40,583.77	---	945,335.76
	---	---	---	---	1,267,092.06	1,267,092.06
TOTAL:	¢9,198,310.02	1,782,161.02	1,859,471.53	300,021.94	1,267,092.06	14,407,056.57

NOTE: The amount of $1,267,092.06 is the total reported expended for machinery by the Department of Public Works for the four year period, not necessarily for road building.

Table IX (Continued)

PROVINCE	ROADS		BRIDGES		UNIMPROVED ROADS	TOTAL
	Construction	Maintenance	Construction	Maintenance		
			1937			
San Jose	170,438.65	279,430.77	43,822.65	30,564.30	31,485.90	555,742.27
Heredia	248,072.41	33,860.25	16,731.26	2,450.32	11,378.25	312,492.49
Cartago	169,159.66	79,249.36	111,676.61	20,486.97	8,848.70	389,421.30
Alajuela	110,260.01	555,817.73	44,834.98	60,145.66	6,911.65	777,970.03
Puntarenas	37,633.34	6,152.87	33,425.60	2,876.24	1,619.75	81,707.80
Limon	25,907.38	1,538.40	---	9,416.33	40.00	36,902.11
Guanacaste	33,061.85	82,111.66	84,523.06	20,496.61	4,751.00	224,944.18
Total:	¢794,533.30	¢1,038,161.04	¢335,014.16	¢146,436.43	¢65,035.25	¢2,379,180.18
			1938			
San Jose	319,498.90	209,161.49	20,399.38	43,751.05	27,339.45	620,150.27
Heredia	456,009.57	67,624.18	43,712.71	22,874.48	13,634.20	603,855.14
Cartago	527,833.22	71,279.48	255,610.17	23,744.26	11,164.34	889,631.47
Alajuela	924,851.05	158,278.27	249,272.07	19,523.89	4,842.28	1,356,767.56
Puntarenas	16,592.50	16,297.17	10,376.02	---	3,926.95	47,192.64
Limon	22,822.88	1,298.90	293.00	---	1,053.90	25,468.68
Guanacaste	133,008.02	80,043.76	94,929.50	13,098.97	5,982.97	327,062.75
Total	¢2,400,616.14	¢603,983.25	¢674,592.85	¢122,992.65	¢67,943.62	¢3,870,128.51
			1939			
San Jose	622,136.38	172,669.08	28,157.84	71,054.79	33,948.66	927,966.75
Heredia	662,325.71	49,129.14	21,446.92	4,374.53	19,703.30	756,979.60
Cartago	776,428.35	85,425.55	123,424.34	17,526.67	11,908.16	1,014,713.07
Alajuela	1,446,767.86	168,800.39	209,113.20	8,655.60	6,436.32	1,839,773.37
Puntarenas	20,005.31	17,024.85	23,524.85	753.27	3,347.00	64,655.28
Limon	14,618.75	24,397.73	7,187.35	1,546.95	12,358.90	60,109.73
Guanacaste	143,352.81	88,879.22	71,762.81	10,902.30	8,713.00	323,610.14
Total	¢3,685,635.17	¢606,326.01	¢484,617.31	¢114,814.11	¢96,415,34	¢4,987,807.94

Table IX (Continued)

1940

PROVINCE	ROADS		BRIDGES		UNIMPROVED ROADS	TOTAL
	Construction	Maintenance	Construction	Maintenance		
San Jose	123,808.00	24,321.55	97,697.50	15,947.31	No data available for this period	261,774.36
Heredia	151,971.91	13,105.89	7,032.94	1,349.34		173,460.08
Cartago	236,735.87	5,890.66	95,536.23	1,445.43		339,608.19
Alajuela	398,912.33	8,609.85	42,316.17	10,724.50		460,562.85
Puntarenas	2,939.10	---	5,009.85	---		7,948.95
Limon	10,910.69	---	409.80	---		11,320.49
Guanacaste	92,746.22	3,008.00	11,427.41	5,902.15		113,083.78
Total	₡1,018,024.12	₡54,935.95	₡529,429.90	₡35,368.73	---	₡1,367,758.70

* One colon equals $0.178.

Source of Funds

There are several sources of funds used for highway betterment in Costa Rica; loans from the Export-Import Bank of the United States, appropriations of the United States, pioneer road" funds of the U. S. Army secured from Lend-Lease funds, and general government revenues of Costa Rica. In September 1941 it was decided in a cabinet meeting to spend the ₡8,992,000 ($1,600,000) secured from the U. S. Export-Import Bank on the following highways:

Villa Colon to Puriscal
Aserri to San Ignacio Acosta
Turrialba to Cartago
Paraiso to Orosi
Zarcero to Villa Quesada.

Prior to this time these roads were in existence as unimproved dirt roads, passable only during the dry season for light trucks. The proceeds of the loan were to be used in hard-surfacing these roads, reducing grades, relocation of the difficult sections and widening where needed. In late 1940 a loan was made of ₡26,852,000 ($4,600,000) by the Export-Import Bank which was allocated for construction on the Pan American Highway between San Jose and the Panama border. At the time the loan was announced it was estimated by the Honorable Jesse Jones, Federal Loan Administrator, that it would require 4 years to complete the section. But the "pioneer road" program inaugurated early in 1942 has without a doubt changed the estimates, so that it is hoped to have a passable road through by May 15, 1943.

Each year a sum is set aside in the general budget for highway construction and repair, although frequently the Congress is asked for additional funds to complete some work for which the budgeted expenses did not provide. Funds which the budget sets aside for the unemployed are frequently used to employ these unemployed workmen on the roads. Seventy-five percent of the profits from the Government gasoline monopoly is used on construction and maintenance of roads and bridges.

In the year 1940, according to a report of the Bureau of Roads and Bridges, taxes on drivers' licenses supplied ¢523,575 ($93,180) to road and bridge construction and maintenance, the gasoline monopoly supplied ¢598,210 ($108,920) and other funds ¢263,603 ($45,833).

Any taxes levied by the Costa Rican Government on the use of the highways is entirely for the purpose of maintaining the roads. Direct tax on gasoline amounts to ¢0.10 ($0.02) per gallon which the consumer pays and is and is included in the retail price of gasoline. The Banco de Seguros, through its monopoly effects the importation of all gasoline and deposits all collections to the credit of the government. Fees derived from licenses to drive are likewise used in the highway program. Each licensee must make an initial payment of ¢10 ($1.78) for a permit to drive. An annual payment of ¢5 ($.89) is required for the registration and plates of each motor vehicle operated in the country. License fees proscribed on other types of vehicles are as shown in Table X.

Table X

Licenses Proscribed for Vehicles Other than Automobiles

Type	Amount
Motorcycles	¢2.50 ($0.45) per year
Bicycles	2.00 ($0.36) " "
Horse or ox drawn carts	1.50 ($0.27) " "
Push carts	1.00 ($0.18) " "
Horse carriages	1.50 ($0.27) " "

Current Budget

The latest year that budgetary figures are available is 1940. In that year $1,625,000 was allotted to road works, which was supplemented by other funds. At that time (1940) estimated expenditures for 1941 were ¢2,773,300 ($196,450) for construction and maintenance of roads and ¢897,600 ($160,080) for construction and maintenance of bridges

MATERIALS AND EQUIPMENT

Asphalt-Cement

During 1939, asphalt valued at ¢78,118 ($14,003) and 32,319,279 kilograms (71,235,000 pounds) of cement valued at ¢1,986,300 ($353,330) were imported. What part of the cement was used for construction of roads and bridges is not known. The country of origin of the cement is presented in Table XI.

Costa Rican Cement Imports - 1939

Origin	Weight in Kilograms	Value
Germany	22,362,800	₡1,309,500 ($233,431)
Belgium	28,749	2,844 ($507)
United States	3,499,356	302,960 ($54,050)
Italy	657,255	41,105 ($7,327)
Japan	3,223,343	138,600 ($25,282)
Norway	423,560	24,852 ($4,430)
Sweden	2,124,212	158,780 ($28,303)

Note: There are 2.204 pounds in each kilogram.

In January 1943, according to the Department of Roads and Bridges, there were not any stocks of asphalt or cement on hand. Whenever a shipment arrives it is immediately dispatched to jobs under construction where both of these materials are badly needed.

Road Building Machinery and Equipment

American suppliers since World War II have dominated the market in all road building equipment. Two factors have been responsible for this; friendliness of Costa Rican government, and the practical impossibility of securing machinery, asphalt and cement from Europe. Import statistics of road building equipment are not classified separately in the import statistics, but the United States has supplied most of the machinery; therefore United States exports reflect closely the requirements. In the years 1935, 1936, and 1939, about ₡105,600 ($17,500) worth of road machinery and equipment was exported to Costa Rica. In 1937, United States shipments amounted to only ₡38,868 ($6,478) but there was a sharp rise in 1938, when ₡558,984 ($93,164) worth were shipped. Table XII shows the shipments for the years 1939 and 1940.

Table XII

U. S. Exports to Costa Rica of Road Machinery
1939 and 1940

	1939		1940	
	Number	Dollars	Number	Dollars
Excavators and power shovels	6	124,200	---	---
Excavator parts and accessories	---	20,024	---	32,264
Concrete mixers	21	9,781	5	1,719
Road rollers	1	2,154	3	2,085
Road graders	4	10,744	1	2,170
Road scrapers	---	---	3	4,868
Other road machinery and parts	---	115,985	---	10,557

Motor Vehicle Registration

As of January 1, 1941, Costa Rica had a total of 3,952 motor vehicles registered as shown in Table XIII.

Table XIII

Motor Vehicles Registered - January 1, 1941

Type	Number
Passenger cars	2,354
Busses	435
Trucks	1,102
Diesels	54
Trailers	1
Fire-fighting apparatus	5
Special trucks	1
Total	3,952

Practically all these cars are of American make (made in United States). Table XIV shows the ownership of these vehicles.

Table XIV

Vehicular Ownership - January 1, 1941

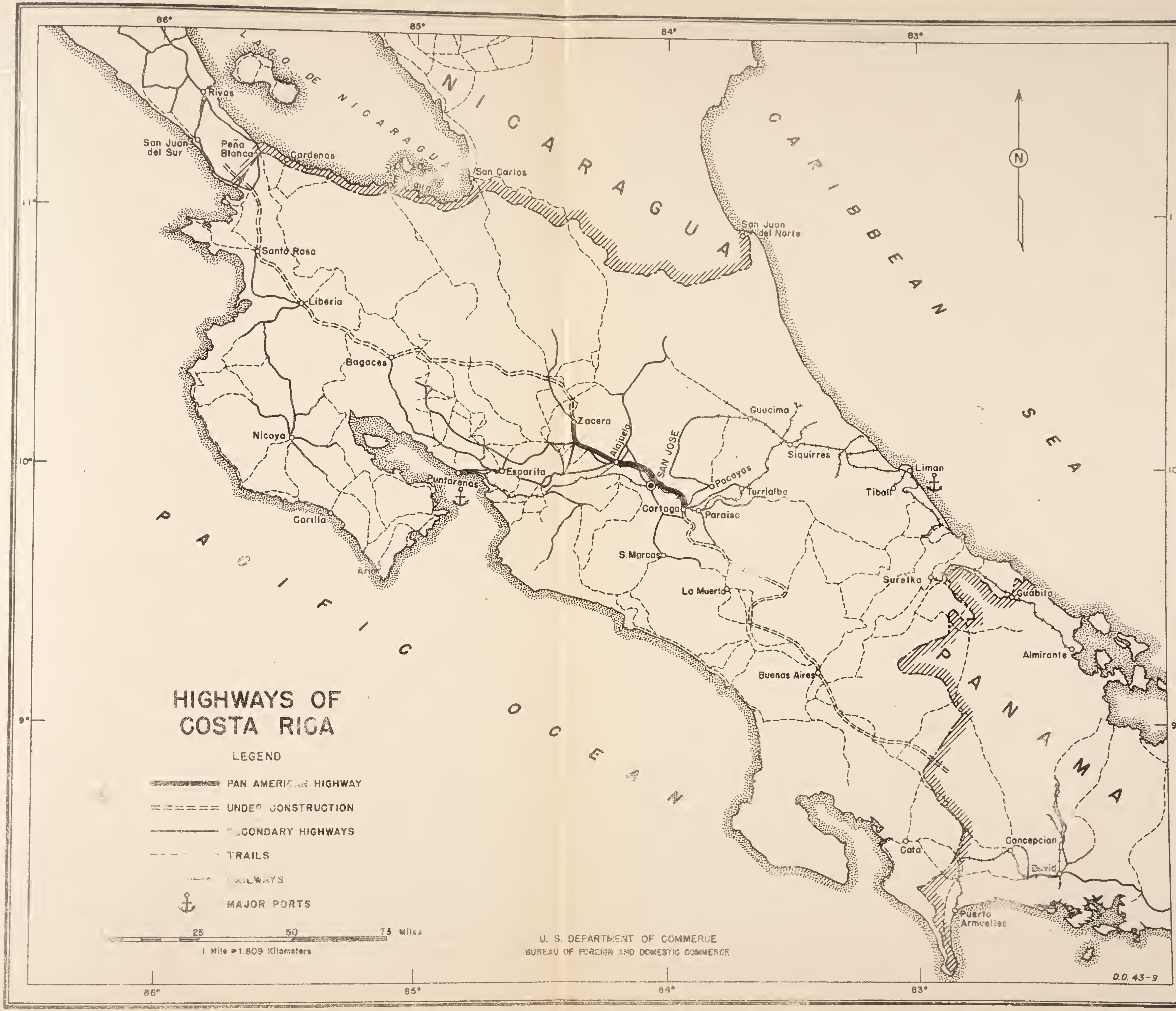
	Private	For hire	Government
Passenger cars	2,056	282	16
Busses	435	---	---
Trucks	1,027	---	75

There is no new machinery on order or in transit with the exception of some spare parts for tractors which had been shipped in January 1943. Table XV shows the road machinery on hand in January 1943.

TABLE XV

Road Machinery in Costa Rica - January 1943

Type	Number of Units	Origin
Steam Rollers	25	U.S.A., 21, Germany 4
Tractors	12	U.S.A.
Trucks	8	U.S.A.
Air compressors	3	U.S.A.
Water pumps	3	U.S.A.
Steam shovels	1	U.S.A.
Mixers	3	U.S.A.
Carryalls	1	U.S.A.
Asphalt melters	1	U.S.A.



HIGHWAYS OF COSTA RICA

U. S. DEPARTMENT OF COMMERCE
BUREAU OF FOREIGN AND DOMESTIC COMMERCE

D.D. 43-9

2-10582

HIGHWAYS OF PANAMA AND CANAL ZONE

THE REPUBLIC OF PANAMA
(REPUBLICA DE PANAMA)

The land mass of Panama is shaped like a crescent with the convex side toward the north. The republic embraces all the territory that is called the Isthmus. The bounds consist of the Caribbean Sea on the north, Colombia on the east, Pacific Ocean on the south, and Costa Rica on the west. The area of Panama is 86,902 square kilometers (33,667 square miles) not including 1300 square kilometers (502 square miles) of the Canal Zone. It is 680 kilometers (422 miles) long, and extends nearly east and west, being slightly southeast to northwest. In width it ranges from 50 kilometers (31 miles) at the narrowest point, to 190 kilometers (118 miles) at the widest point. The capital and chief city is Panama with about 128,000 people in 1937, but since inflated to a higher figure due to war activities

Some 8 kilometers (5 miles) east of the present city is the ruins of the old Spanish city which was destroyed in 1671 by the English pirate Henry Morgan. Closely associated with the capital are two cities within the Canal Zone, Balboa, the port, and Ancon a commercial and residential city. The second city of importance is Colon on the Atlantic side with a population (1937) of 66,448 persons Closely connected with Colon is the American port city of Cristobal. David is an important interior city on the Inter-American Highway, near the Pacific coast at the far western boundary of the country with a population (1937) of about 5000 persons. The national tongue is Spanish. The monetary unit is the Balboa which is the same size and fineness as the United States silver dollar and is the equivalent in value.

There is a total of 641 kilometers (398 miles) of all types of railways in Panama and the Canal Zone. The Panama Railway Company 1.52 meters operates 223 kilometers (139 miles) of the total. Ferrocarril Nacional de Chiruqui, owned by the government of Panama. Its lines are of 1.52 meters (5-foot) gage and operates 94 kilometers (58 miles) of track. The third railway of importance comprises about 97 kilometers (60 miles) and is operated by the United Fruit Company. The remainder of the railways are owned and operated by minor companies. The gage of all lines with the exception of the Panama Railway is 0.914 meters (3 - feet). Tropical rains increase the volume of water on the rivers so much that transportation on them during the rainy season is difficult and dangerous.

GEOGRAPHY AND CLIMATE

The area of the Republic is (86,902) square kilometers (33,667) square miles). Two mountain chains, about equally distant from the coasts traverse the Republic. Lying between these are included a number of valleys and plains which afford excellent pasturage for cattle and in which tropical products can be raised. There are no active volcanoes in the country and earthquakes seldom occur.

The climate is tropical except in the higher altitudes. The average temperature along the coasts is about 80 degrees Fahrenheit, while in the higher altitude the range is about 66 degrees, with very little variation in either area throughout the year. The dry season occurs from January to April, and the wet season extends over the remainder of the year, with the heaviest rains falling during October and November. Average rainfall is about 37 decimeters (140 inches) on the Atlantic coast 24 decimeters (93 inches) in the interior, and 15 decimeters (60 inches) on the Pacific coast. From December to May the heat is the greatest, though it is frequently tempered by ocean breezes. At one time Panama was a vertiable pesthole of yellow fever and malaria. The drainage from the highlands in general is good. Since the United States took over the Panama Canal, sanitation in the entire republic has been under the supervision of U. S. Army Engineers and the region has become as healthful as any part of Central America. This is especially true of the territory in the proximity of the Canal Zone.

GOVERNMENT

The constitution adopted February 13, 1904 divides the government into the legislative, executive and judicial branches.

The legislative power is vested in the National Assembly, composed of one chamber. Members are elected by direct popular vote for a term of 4 years, on the basis of one deputy for every 15,000 persons or fraction over 7,500. An equal number of substitutes are elected at the same time to take the place of the deputy in case of absence, disability, or death. The legislature convenes in the capital city, Panama once every two years on September 1, for a period of 90 days but the term may be extended 30 days. The President of the Republic may call an extraordinary session.

The President's term of office is six years, and he is forever barred from reelection. Every citizen over twenty-one years of age is entitled to sufferage. Three designates are chosen every two years by the National Assembly who take the place of the President in the respective order named, in the event of his absence, idsability or death. Every citizen is entitled to sufferage. The presidential cabinet consists of the following Secretary's, Government and Justice; Foreign Relations; Finance and Treasury; Public Instruction; and Agriculture and Public Works.

The judicial branch consists of a supreme court of five judges (appointed by the President, one every two years, for a term of ten years) a superior court, several circuit courts, and a number of municipal courts. The judges of the superior and circuit courts are appointed by the supreme court and the municipal judges by those of the circuit courts, both for four-year terms.

Panama does not have any army or navy, relying on the United States for its defense. However, there is an efficiently organized and well-disciplined national police corps.

POPULATION

In 1940, the total population consisted of 631,637 persons. This did not include 51,287 residents of the Canal Zone, of whom 32,390 were United States citizens. The population is estimated to be 12 percent white, 19 percent negro, eight percent pure Indian and 61 percent mestizo. There are about 75,000 negroes of whom about 45,000 are British subjects from the West Indies. The constitution prohibits the immigration of negros whose original language is not Spanish, members of the yellow race, and the races of India, Asia Minor and Northern Africa. Illiteracy in Panama is estimated at about 50 percent of the total population.

INDUSTRY

Climatic conditions and the excellent fertility of the soil are responsibility for a good growth of tropical vegetation. About three-eighths of the total area is occupied, and of this part only a negligible portion is cultivated. In the past the most important product has been bananas, almost all of which were exported to the United States. Other products produced are cocoa, coconuts, coffee, rubber, and sugar cane. The Government is alive to the importance of agriculture and is promoting it by soil studies and arranging for the redistribution of land to genuine homesteaders. Forested areas are extensive and contain great quantities of cabinet, dye and building woods. Lumbering has not as yet reached the full stage of its development but i$ destined for greater importance in the economy of the country. Balata and rubber, tagua nuts, and nispero are found in considerable quantities. While rubber trees have been planted in great quantities most of the output is gathered from trees that grow naturally.

Stock raising is given encouragement by the Government and cattle for breeding purposes are imported duty free. Estimates place the number of cattle at between 500,000 and a 1,000,000, although there are grazing lands available for many times that number.

Industrially Panama is making steady progress. Numerous sugar mills are in existence and several oil refineries have been established. In order to utilize the toquilla palm, grown in many parts of the Republic, from which is woven the so-called "Panama" hat, the Government sent a Commission to Ecuador to study the manufacturing process. A factory has been established at Cheysigana, in the province of Darien to develop the industry.

Pearls from Panama have been famous since the Isthmus was crossed by Balboa. The main source of supply for the pearl industry are the Pearl Islands lying in the Gulf of Panama, about fifty miles from the port of Balboa. Advancing prices have stimulated the industry until now pearl fishing is carried on under most systematic methods. As a result of the Spanish law that everything below the surface of the earth belongs to the state the business has been carried out under concession grants, which have been very profitable.

MINERALS

Mineral resources include deposits of gold, silver, iron, copper, coal, and petroleum. Gold has been mined since before the Spanish conquest. Manganese is abundant and new concessions have been granted which it is hoped will greatly aid the war effort of the United Nations. Most of the mineral deposits are located near the Colombian border in the territory of the San Blas or Darien Indians.

IMPORTS AND EXPORTS

Panama has a very unfavorable balance which is offset by so-called invisible exports such as expenditures of Canal Zone employees, U. S. Army and Navy personnel and in the past tourists. The excellent bazaars are able to undersell those of neighboring countries, thus accounting for an extensive cash trade. Re-exports exceed exports of domestic products. In 1940, the United States supplied seventy percent of imports and took ninety-four percent of the exports. Exports consists of bananas, cocao, coconuts, hides, gum, tortoise shells and some gold. Among the imports are butter, rice, flour, vegetables, lumber, automobile tires and iron and steel products. In 1937, per capita trade amounted to, imports $40.85; exports $7.60. Table I shows the foreign commerce (including the Canal Zone but excluding re-exports) for the years 1936 through 1940.

TABLE I

Panamanian Exports and Imports, 1936 - 40. (In Balboas or Dollars)

Year	Imports	Exports
1936	18,989,846	4,163,651
1937	21,828,175	4,069,727
1938	17,651,454	3,743,968
1939	20,463,765	3,487,187
1940	23,936,657	4,054,866

CONCLUSION

Now that the old specter has been dispelled; i.e. the belief that swamps and jungles constituted impenetrable barriers to a land invasion of the Canal Zone, the prospects for Panama developing a good road system are brighter than ever before. The opening of the Trans-Isthmian Highway was the final blow to this outmoded idea. The policy of the Government of the Republic has been one of wishful waiting. That is of waiting for the United States to build roads to service its airfields. The President intimated in a recent speech that the improvements on the Pan-American Highway between Panama City and Rio Hato, the site of the Panama Canal Training Center, ought to be borne by the U. S. Government inasmuch as Panama had only a "minor interest" in this construction.

The Pan-American Highway is the only important road in the Republic with the exception of the Trans-Isthmian Highway. There are no other roads in the Republic except those in the cities and larger towns that are all-weather roads capable of handling motor transportation the year round. All the other roads are chiefly trails, which are of little consequence in a transportation system.

Estimates indicate that there will be a considerable increase in traffic on the Inter-American Highway after the winning of the war. By that time there should be a passable all-weather road from the United States to the Canal Zone. Now there is a free ferry running across the Canal connecting the Thatcher Highway with Balboa. The ferry service operates but a few hours and thus is the cause of much inconvenience.

In conclusion it can be said that the destiny of Panamas' Highway system is largely dependent on the U. S. Government.

HIGHWAYS OF PANAMA REPUBLIC AND CANAL ZONE

Military considerations have retarded development of roads and highways leading from the Canal Zone to the interior of Panama. The late General George C. Goethals, builder of the Panama Canal, was stalwart in the belief that the swamps and jungles outside the zone (except to the southwest) constituted formidable and impassable natural barriers to land invaders. Many succeeding commanders of the Canal Zone Department of the Army were of the same belief. Another deterrent was the high cost of building roads through such difficult terrain; and the low productivity of the region did not furnish an economic incentive for road building to the Republic.

Road Mileage by Construction Types

At the end of 1937, according to the report of the American Commercial Attache, there were 1,483 kilometers (921 miles) of highways in all categories in Panama. Statistics were not available for the Canal Zone. In Table II is shown the length of highways by classes.

TABLE II

Length of Highways by Classes in Panama - 1937

Classes	Lengths Kilometers	 Miles
First class, fully completed	458	285
First class, serviceable, but not fully completed	278	173
Second class highways (first category)	167	104
Second class highways (second category)	147	91
Rural roads passable only during the dry season	433	268
Total	1,483	921

Beginning in 1938 a more descriptive terminology was employed and statistics for the Republic and Canal Zone were combined. In Table III are shown the highway lengths for 1938 and 1940, however, statistics were not available for the Canal Zone in 1940. Statistics for 1938 and 1939 are identical.

TABLE III

Highway Lengths in Panama and Canal Zone - 1938 and 1940

Type	Panama				Canal Zone	
	1938		1940		1938	
	Kilometers	Miles	Kilometers	Miles	Kilometers	Mile
Unimproved earth and non-surfaced	400	249	400	249	5	3
Improved earth, sand clay, gravel, etc.	344	214	400	249	16	10
Waterbound macadam	41	25	50	31	---	---
Macadam surface, treated and penetration	364	226	370	230	51	32
Bituminous concrete and asphalt	---	---	---	---	---	---
Cement concrete	20	12	20	12	68	42
Block stone, wood, asphalt and brick	---	---	---	---	---	---
Not specified	---	---	---	---	---	---

Statistics for 1942 for Panama and the Canal Zone are shown in Table IV. Those shown for the Canal Zone are only roads of a strictly non-military nature.

TABLE IV

Road Distances by Construction Types in Panama and Canal Zone - 1942

Type	PANAMA		CANAL ZONE	
	Kilometers	Miles	Kilometers	Miles
Earth	570.9	354.7	none	none
Selected material, sand, clay, etc.	71.4	44.4	10.9	6.8
Gravel with surface treatment	495.5	307.9	none	none
Waterbound macadam			51.8	32.2
Bituminous treated macadam	231.7	144	18.7	11.6
Concrete	123.8	76.9	68.0	42.3
Total	1,493.3	927.9	149.4	92.9

MAIN HIGHWAYS

The section of the Inter-American Highway in Panama is, by far, the most important highway in the country and the Canal Zone since it comprises about one half of the total road mileage in the area. Particular sections of the highway are very important but that will be discussed subsequently in this report under the heading "Pan American Highway".

Next in importance to the Pan American Highway is the Trans-Isthmian highway, which will be opened about April 1, 1943, stretching for 80 kilometers (47.7 miles) across the Isthmus with termini at Panama City on the Pacific side and Colon on the Atlantic. That section of the road between Madden Dam and Panama City was paved about 10 years ago, its width being about 7.62 meters (25 feet). The section recently built between Colon and Madden Dam is cut through well-nigh impenetrable tropical vegetation. Provision was made for the construction of the highway in the treaty of 1939 between United States and Panama. According to the treaty, the United States agreed to furnish a corridor from Colon, on the Atlantic, which was formerly entirely enclosed by the Canal Zone, and to construct a highway through this corridor. On its part, Panama agreed to provide the right-of-way from Colon to Madden Dam, in the middle of the Isthmus. This new portion of the highway has a total width of 40 feet, two 10-foot paved concrete lanes separated by a 1.2 meter (4-foot) dividing strip of oil-treated gravel. Shoulders are 2.4 meters (8 feet) wide. This portion of the highway from Colon to Madden Dam is approximately 40 kilometers (24.85 miles) long with a maximum ascending grade, going toward the Pacific, of 5 percent, and toward the Atlantic side, of 7 percent, for grades no longer than 400 feet, and 6 percent for longer grades, with a minimum radius of curvature of 175 meters (574 feet). Minimum sight distance is 183 meters (600 feet). The roadway is designed for the wheel loads of military vehicles. The highway crosses a series of hogback ridges, of sawtooth design, sharp peaks, and abrupt drops into ravines.

Because of the heavy rainfall, averaging annually 356 centimeters (140 inches on the Atlantic side, 236 centimeters (93 inches) in the interior, and 152 centimeters (60 inches) on the Pacific coast, extensive soil tests were conducted by the U. S. Public Roads Administration to determine maximum permissible height of fills and safe slope angles of both cuts and fills.

Heavy rainfall had its effect on the design of drainage structures. In addition to the many concrete culverts, 6 large and 6 small bridges were required. The larger bridges have three spans with continuous steel girders. The roadway decks are 7.92 meters (26 feet) wide between curbs and paved with concrete. Bridges were erected without falsework to avoid erosion during high water. The design and structure of the bridges permit safe passage of 55 ton tanks. In all 19 bridges were built.

An important trunk line, joining the Inter-American Highway and Augadulce at Divisa (about 223 kilometers (139 miles) west of Panama City, and some 32 kilometers (20 miles) west of Aguadulce) is the Divisa-Mensabe road, which serves the Azuero Peninsula. The peninsula makes up the agricultural provinces of Los Santos and Herrera and the Santiago District. This highway is 81.3 kilometers (50.5 miles) long and skirts the coastal area of the Gulf of Panama extending in a southeasterly direction.

The road is composed of 37.4 kilometers (23.2 miles) of gravel road and 43.9 kilometers (27.3 miles) of asphalt macadam material. The road is passable during the entire year but with great difficulty during the rainy season (May to December). Point to point distances on this highway with the population of the cities (1940) is shown in Table V.

TABLE V

Distances between Cities on Divisa-Mensabe Highway - 1942

				Distance		Aggregate	
From:		-To:		Kilometers	Miles	Kilometers	Miles
Divisa	(Small)	Chitre	(4,790)	38.7	23.4	38.7	23.4
Chitre	(4,790	Las Tablas	(2,127)	30.6	19.0	69.3	42.4
Las Tablas	(2,127)	Mensabe	(Small)	12.0	7.45	81.3	49.85

This highway is approximately 4 meters (13 feet) wide along its entire length. Feeder roads to this artery of traffic are shown in Table VI.

TABLE VI

Feeder Roads of Divisa-Mensabe Highway - 1942

From:	To:	Construction type	Distance Kilometers	Travelability
Artery	-Potuga	Sand clay	3.0	All year
Artery	-Paris	Earth	2.0	All year
Artery	-Pese	Gravel	20.0	All year
Pese	-Los Pozos	Earth	20.0	Dry season
Pese	-Las Minas	Earth	20.0	Dry season
Pese	-Ocu	Earth	14.0	Dry season
Chitre	-Monagrillo	Gravel	2.0	All year
Artery	-Sabana Grande	Gravel	7.0	All year
Los Santos	-Macaracas	Earth	40.0	Dry season
Sabana Grande	-Macaracas	Earth	36.0	Dry season
Guarare	-Pto. Guarare	Earth	7.0	All year
Artery	-Sto. Domingo	Gravel	2.2	All year
Las Tablas	-Sto. Domingo	Earth	1.5	All year
Sto. Domingo	-Pocri	Earth	11.5	Dry season
Pocri	-Pedasi	Earth	20.0	Dry season
	Total		206.2	

The bridges with their description on the Divisa-Mensabe highway are shown in Table VII.

TABLE VII

Bridges of the Divisa-Mensabe Highway - 1942

Location	Capacity	Waterway	Type	Length	Spans	Horizontal clearance	Vertical clearance
Parita	12 tons	Parita River	Steel	300' (100'-130'-100')	3	12'	15'
Los Santos	10 tons	de la Villa River	Steel	262' (131'-131')	2	12'	15'

Use of Motor Vehicles in General Transportation Scheme

The economic development of Panama and the shipment of agricultural products from the interior to Panama City is completely dependent upon motor transportation. Nevertheless, ocean shipping from Puerto Armuelles and Bocas del Toro to the cities of Panama and Colon is becoming increasingly important as a means of cargo transportation. In addition the Chiriqui Railroad serves a portion of the Province of Chiriqui, and the Panama Railroad connects the cities of Panama and Colon, but outside of these rail facilities and the water route from Puerto Armuelles and Bocas del Toro to the cities of Panama and Colon, respectively, transportation is dependent on rubber tires.

Two relatively large communities mentioned above, Puerto Armuelles (population 3,328), a development of the Chiriqui Land Company (subsidiary of United Fruit Company) on the Pacific Coast, near Costa Rica, which is connected by the Chiriqui Railroad with David, on the Inter-American Highway; and Bocas del Toro (population 2,101) a development of the United Fruit Company on the Atlantic are not served by highways.

CANAL ZONE ROADS

The highways on the Pacific side of the Canal Zone are as follows:

The Gaillard Highway (Route 1300) between Panama City and Corozal is 5.5 meters (18 feet) wide and paved with concrete for the total distance of 5.6 kilometers (3.5 miles). From Corozal to Paraiso it is paved with 5.5 meters (18 feet) of asphalt macadam with the exception of a short concrete section at th entrance to Fort Clayton. The section between Paraiso Junction and Madden Road, 6 kilometers (3.75 miles) in length is 5.5 meters (18 feet) wide. From there to the end at Gamboa, a distance of 8 kilometers (5 miles), the road is the same width, surfaced with asphaltic macadam.

The Thatcher Highway (Route 1,400) reaches from the Ferry Landing opposite Balboa to Arraijan at the Panama and Canal Zone border, a distance of 11 kilometers (6.7 miles) and connects with the Panama National Highway. The highway is 6.4 meters (21 feet) wide with no bridges or heavy grades. The country through which the road passes is for the most part heavy jungle.

The Bruja Military Highway (Routes 1,404 and 1,405) reaches from Pedro Miguel Locks (west of the Canal) to Fort Kobbe, a distance of 21 kilometers (13 miles). The road is macadamized surface and is in fairly good condition. Access to this road from east of the Canal, other than by the ferry at Balboa and thence via the Thatcher Highway is at present by a ferry just below the Miraflores Locks or by crossing on the lock gates of Pedro Miguel Locks.

The Empire-Chorrera Highway (Route 1,400-A) connects the abandoned town of Empire in the Zone with Chorrera in the Republic. The road is a macadamized, two way all weather road, certain section of which are maintained by Army Engineers. Where it is not maintained by the Army it is only in fair condition and passable.

Highways on the Atlantic side consist of:

Bolivar Highway (Route No. 300) which extends out from Colon and Cristobal, following the Panama Railroad tracks to Mount Hope which is 2.5 kilometers (1.57 miles) from Colon; from here the road swings east of south, then south, and passes Fort Davis to Gatun running nearly southwest. The road is of concrete with a 5.5 meter (18 foot) roadway. A by-pass has recently been built around the military reservation at Fort Davis.

The Randolph Road (Route No. 300-A) branches off the Bolivar Highway at Silver City and runs parallel with the Fort Randolph branch of the Panama Railroad around the south and east shores of Manzanillo Bay. The roadway is 5.5 meters (18 feet) wide, of concrete base and in excellent condition. The highway serves the Army aviation station at France Field, the Naval Submarine Base at Coco Sola and Fort Randolph (part of the Coast Defenses of Cristobal).

There are no important bridges, defiles or unusually heavy grades on these highways.

An improved dirt highway known as Brazos Road joins the Bolivar highway at a point just south of Mount Hope, at the east side of Fort Davis. The total length is 6.75 kilometers (4.2 miles) and according to latest reports trucks could pass over it in the dry season only, but it was expected that in 1941 it would be improved up to standard of an all-weather road.

The road between Fort Sherman and Fort San Lorenzo, Route No. 200, is 9.5 kilometers (5.9 miles) in length with a 2-way hard surface roadway maintained in excellent condition. At Fort San Lorenzo there is a pontoon bridge across the Rio Chagres.

PAN AMERICAN HIGHWAY

East of Chepo on the Pan American Highway, the Panamanian Government is surveying an 18 kilometer (11 miles) section. Plans are to extend the highway along this section immediately to Ballano, 5 kilometers (3 miles) away for the purpose of erecting a cement plant. It is contemplated to extend the highway to Colombia at some indefinite date. The highway between the Colombian border and Chepo is shown as trail on the map, but it is doubtful if there is even an existing trail. The territory is a vast jungle, for the most part swamps; little reliable information is available on the area. From Chepo to Volcan the highway is known to the Panamanians as the National Highway. Generally the highway is 6 meters (20 feet) wide and suitable for 2-way all weather traffic. Along some sections only the crown of the road exists and in wet weather these sections become in effect one-way roads. Table VIII shows the surface condition of the National Highway according to types.

TABLE VIII

Sections of National Highway by Types - 1941

Location	Type of Surface
Chepo to Tocumen	Gravel
Tocumen to Panama City	Asphaltic macadam
Thatcher Ferry (opposite Balboa) to La Chorrera-including Canal Zone, Thatcher Highway	Reinforced concrete
La Chorrera to Rio Hato	Reinforced concrete
Rio Hato to Divisa	Asphaltic macadam with some sections having gravel shoulders.
Divisa to Puerto Vidal	Gravel
Puerto Vidal to David	Gravel

Table IX shows the important branch roads that connect up the Pan American Highway with other important towns off the highway.

TABLE IX

Branch Roads of the Pan American Highway - 1942

From	To	Construction type	Distance Kilometers	Travel-ability
David	-Boquete	Earth	42.0	All year
David	-Pedregal	Sand clay	8.0	All year
I. A. Highway	-Gualaca	Earth	10.0	All year
I. A. Highway	-Horconitos	Earth	4.0	All year
I. A. Highway	-San Felix	Earth	1.0	All year
I. A. Highway	-Las Lajas	Earth	1.0	All year
I. A. Highway	-Tole	Earth	50.0	Dry season
I. A. Highway	-Las Palmas	Earth	9.0	Dry season
I. A. Highway	-Barranco Colorado	Earth	9.0	Dry season
I. A. Highway	-Rio de Jesus	Earth	7.0	Dry season
I. A. Highway	-Canazas	Earth	38.0	Dry season
I. A. Highway	-La Mesa	Earth	20.0	Dry season
Santiago	-San Francisco	Gravel	18.0	All year
Santiago	-Puerto Mutis	Earth	29.0	All year
I. A. Highway	-Atalaya	Gravel	3.0	All year
I. A. Highway	-Ocu	Gravel	42.0	All year
I. A. Highway	-Calobre	Earth	42.0	Dry season
I. A. Highway	-El Cristo	Earth	4.0	All year
I. A. Highway	-Pocri (via Aguadulce)	Waterbound macadam	2.0	All year
I. A. Highway	-Pocri (via Ofelina)	Earth	7.0	All year
I. A. Highway	-El Harino	Earth	22.0	Dry season
I. A. Highway	-Ola	Earth	20.0	Dry season
Penonome	-La Pintada	Earth	17.0	All year
Penonome	-Las Mendozas	Earth	1.0	All year
Penonome	-Pto. Posada	Earth	22.0	All year
Anton	-Pto. Obaldia	Sand clay	11.0	All year
I. A. Highway	-Las Cascadas	Earth	7.0	All year
I. A. Highway	-Chiru	Earth	3.0	All year
I. A. Highway	-La Ermita	Earth	2.5	All year
I. A. Highway	-El Valle	Sand clay	28.0	All year
I. A. Highway	-San Carlos	Waterbound macadam	2.0	Old road
I. A. Highway	-La Laguna	Earth	2.0	All year
I. A. Highway	-Cabulla	Earth	4.0	Dry season
I. A. Highway	-Nva. Gorgona	Earth	3.0	All year
I. A. Highway	-Chame	Waterbound macadam (2.); gravel (2.5)	2.5	Old road
I. A. Highway	-Pto. Bejuci	Sand clay .	6.0	All year
I. A. Highway	-Campana	Gravel	1.0	All year
Capira	-El Potrero	Earth (3.4) Sand clay (.6)	4.0	All year
Capira	-Cermeno	Waterbound macadam	5.0	All year

Table IX continued.

From	-To	Construction type	Distance Kilometers	Travel-ability
Chorrera	-El Loco	Earth	1.0	All year
Chorrera	-Pto. Caimito	Earth	9.0	All year
Chorrera	-Paja	Gravel (formerly macadam)	42.0	All year
San Francisco	-Pma. Viejo 1/	Waterbound macadam	3.5	All year
I. A. Highway	-Villa Rosario 1/	Waterbound macadam	5.0	Old road
I. A. Highway	-Sta. Rita 1/	Gravel	5.0	All year
I. A. Highway	-Arraijan 1/	Cement	.6	All year
I. A. Highway	-Barrio Obrero 1/	Gravel	1.4	All year
I. A. Highway	-Aeropuerto Paitilla 1/	Waterbound macadam	2.5	All year
I. A. Highway	-San Francisco 1/	Waterbound macadam	5.0	All year
I. A. Highway	-Pueblo Nuevo 1/	Waterbound macadam	3.0	All year
I. A. Highway	-Carrasquilla 1/	Waterbound macadam	.5	All year
I. A. Highway	-Gold Club 1/	Waterbound macadam	1.0	All year
I. A. Highway	-Mont. Obsc. 1/	Waterbound macadam	2.5	All year
I. A. Highway	-Pma. Viejo 1/	Sand clay	3.7	All year
I. A. Highway	-Pacora	Gravel	2.4	All year
Chepo	-La Capitana	Earth	4.0	All year
		Total length of all feeders	601.1	kilometers

There are 4 bridges east of the Canal on the highway and pertinent information is shown on them in Table X.

TABLE X

Bridges on Pan American Highway East of Canal - 1941

River Crossing	Distance from Panama City	Type	Width	Headroom
Juan Diaz	12.39 kilometers	Concrete arch	6. meters	open
Tapia	18.34 kilometers	Deck truss	4.05 meters	4.57 meters
Tocumen	22.53 kilometers	Pony truss	4.05 meters	4.57 meters
Pacora	36.2 kilometers	Deck truss	4.05 meters	4.5 meters

1/ These feeders are all in the environs of Panama City.

In April 1941, the bridges described in Table XI were in use between the Canal and Aguadulce.

TABLE XI

Bridges on Pan American Highway between Canal and Aguadulce, April 1941

River Crossing	Distance From Canal	Type	Overall Width	Headroom
Caimito	25 kilometers	Steel	6 meters	covered
Quebrada Mora	67 kilometers	Pony truss	3.6 meters	open
Lagarto	68 kilometers	Pony truss	3.6 meters	open
Chame	75 kilometers	Through truss	4.0 meters	4.57 meters
Las Lajas	81 kilometers	Deck truss	4.0 meters	open
Tetita	84 kilometers	Deck truss	4.0 meters	- - -
Teta	85 kilometers	Steel arch	4.0 meters	- - -
Corona	96 kilometers	Through truss	4.0 meters	- - -
Caton	98 kilometers	Deck truss	4.0 meters	- - -
Las Guias	107 kilometers	Deck truss	4.5 meters	- - -
Plantanal	109 kilometers	Pony truss	4.0 meters	- - -
Majagual	113 kilometers	Deck truss	4.0 meters	- - -
Farrallon	118 kilometers	Through truss	4.26 meters	- - -
Hato	122 kilometers	Through truss	4.26 meters	4.57 meters
Chico	126 kilometers	Through truss	4.26 meters	4.26 meters
Anton	132 kilometers	Through truss	4.0 meters	4.57 meters
Guayaba	133 kilometers	Through truss	4.0 meters	4.57 meters
Estancia	136 kilometers	Through truss	4.0 meters	4.57 meters
Juan Diaz	139 kilometers	Through truss	4.0 meters	4.57 meters
Chorrera	140 kilometers	Through truss	4.0 meters	4.57 meters
Hondo	144 kilometers	Through truss	4.0 meters	open
Cocle	162 kilometers	Through truss	4.0 meters	4.57 meters
Quebrada Jobo	163 kilometers	Pony truss	4.5 meters	open
Herradura	167 kilometers	Pony truss	4.5 meters	open
Flood Channel of Rio Grande	171 kilometers	Pony truss	4.5 meters	open
Grande	172 kilometers	Through truss	4.27 meters	4.57 meters
Cano	176 kilometers	Through truss	4.27 meters	4.57 meters
Churube	177 kilometers	Through truss	4.27 meters	4.57 meters
Chico	184 kilometers	Through truss	4.27 meters	4.57 meters

TABLE XII

Length of Bridges on the Highway between Aguadulce and David - 1941

River crossing	LENGTH Meters	LENGTH Feet
San Pedro	60	190
Aclita	60	190
Jose Maria Dutari, suspension bridge over San Pablo	165	540
Tribique	40	130
Tabalico	30	100
Sapotillo	40	130
Joroneso	30	100
Vidal	40	130
Tabasara	137	450
Santiago	79	260
Salade	30	100
Santa Lucia	40	130
Honda	30	100
San Felix	98	320
Dupo	40	130
Juay	40	130
San Juan	85	280
Fonseca	171	560
Estero Ajo	40	130
Chorcha	55	180
Corrales	40	130
Risacua	55	180

It was anticipated in April 1941 and it is now believed they have been built, the bridges shown in Table XIII. The existing bridges between Rio Perequete, which is 7.5 kilometers (4.7 miles) from La Chorrera, and Rio Hato, 89 kilometers (55 miles) from La Chorrera, were dismantled. They were replaced by those shown in Table XIII.

TABLE XIII

Proposed Bridge Construction on National Highway between La Chorrera and Rio Hato, April 1941

Name of Stream	Kilometers from La Chorrera	Type of Structure	Span Length (meters)
Rio Perequete	7.5 km.	3 span continuous I-Beam	12 m. 15 m. 12 m.
Rio Capira	22.0 km.	3 span continuous I-Beam	10 m. 12 m. 10 m.
Rio Camaron	26.0 km.	Simple I-Beam span	15 m.
Rio Sajalises	28.0 km.	3 span continuous I-Beam, 30 degree Skew	12 m. 15 m. 12 m.
Rio La Mona	34 km.	Simple I-Beam span 30 degree Skew	18 m.
Rio Lagarto	35 km.	3 span continuous I-Beam, 30 degree Skew	12 m. 15 m. 12 m.
Rio Bejuco	36 km.	3 span continuous I-Beam	10 m. 12 m. 10 m.
Rio Chame	42 km.	3 span continuous plare girder	29 m. 37 m. 29 m.
Rio Las Lajas	48 km.	3 span continuous I-Beam	18 m. 24 m. 18 m.
Rio Tetita	51 km.	3 span continuous I-Beam	18 m. 24 m. 18 m.
Rio Tela	52 km.	2 hinged Steel arch	49 m. arch span 9 m. end spans
Rio Mata Ahogada	57 km.	Plate girder with cantilever ends	37 m. span 26 cantilever ends
Rio Calabazo	58 km.	Plate girder with cantilever ends	27 m. span 5 m. cantilever ends
Rio Corona	63 km.	3 span continuous I-Beam	15 m. 18 m. 15 m.
Rio coton	65 km.	3 span continuous I-Beam	18 m. 24 m. 18 m.
Rio Agallal	67 km.	3 span continuous I-Beam	18 m. 24 m. 18 m.
Rio Las Cuias	71 km.	3 span continuous 2 I-Beam spans 1 I-Beam span 30 degree Skew	18 m. 24 m. 18 m.
Rio Platanal	76 km.	3 span continuous I-Beam, 30 degree Skew	15 m. 18 m. 15 m.
Rio La Mona	79 km.	3 span continuous I-Beam, 30 degree Skew	15 m. 18 m. 15 m.
Rio Majagual	80 km.	2 span continuous I-Beam	21 m. 21 m.

2-

Table XIII continued.

Name of Stream	Kilometers from La Chorrera	Type of Structure	Span Length (meters)
Rio Patino	83 km.	3 span continuous I-Beam, 30 degree Skew	12 m. 15 m. 12 m.
Rio Farallon	85 km.	3 span continuous I-Beam	18 m. 24 m. 18 m.
Rio Hato	89 km.	3 span continuous I-Beam	15 m. 18 m. 15 m.

At the present time (February 1943) it is not anticipated by the Public Roads Administration that they will do any construction on the Pan American Highway in Panama. The Army Engineers have under their jurisdiction some construction at the western end of the highway. Construction is going on, estimated to cost $4,500,000 exclusive of the fee. About two-thirds of the contract, however, involves work in Costa Rica. The 40 kilometers (25 miles) of trail between Volcan, Panama and the Costa Rican border is being constructed as a Pioneer Road at an estimated cost of $1,250,000 and the dry weather stretch, 30 kilometers (19 miles) in length between David and Concepcion is also being constructed as a Pioneer Road project at an estimated cost of $300,000.

The completed section of the Pan American Highway, as well as comprising a large part of the road mileage, is the most important traffic thoroughfare in the Republic. At the moment there are no restrictions as to type or size of vehicles which may use the highway, but the subject of prohibiting all but rubber tired vehicles is under consideration. The amount of traffic both as to number of vehicles and tonnage of cargo is steadily increasing.

On the subject of transportation of strategic materials on the Pan American Highway there is this, contained in a Consular Report from Panama dated March 4, 1943:

> "The Embassy has consistently maintained that for all practical purposes the Republic of Panama and the Canal Zone are a single economic unit. The web binding the two together is closely and intricately woven. (For instance, over 40% of the working population in Panama City is employed in the Canal Zone). Panama is essentially an agricultural country. The more self-sufficient the country becomes in the production of staples; the less it will have to rely on imports which must be brought in by ocean vessel -- thus releasing badly needed cargo space for the war effort. A well organized motor transportation system is essential to the development of Panama's agriculture. The Inter-American Highway is the jugular vein of that transportation system. Agricultural commodities are picked up at entrepots all along the Highway and transported to Panama City's markets. David is perhaps the most important commercial center in the interior, and is a terminal both of the Chiriqui Railroad (which services Puerto Armuelles) and (at present) the Inter-American Highway. Panama and Colon are the most important ocean roadsteads in the Republic."

In its relation to the national highway system, the Inter-American is invaluable.

PLANNING AND FINANCING

The planning and financing of road construction is somewhat diversified in this area. Authority in roadwork matters as it relates to Panama proper is under the jurisdiction of the Department of Hygiene, Beneficence and Public Works. The Public Roads Administration has control over the expenditures on the part of the United States on the Inter-American Highway. Besides these two organizations the U. S. Army Engineers has under way two projects in Panama designed to push an all weather road through from the United States to the Canal at the earliest possible moment. Planning and financing of roads in the Panama Canal is under the authority of the Governor.

In Table XIV are given the amounts expended by Panama for the years 1938-1940. Statistics for the Canal Zone are only available for 1938.

TABLE XIV

Expenditures in Panama - 1938-40

	1938	1939	1940
Construction	$450,000	$300,000	$508,414
Maintenance	$300,000	$350,000	

Highway expenditures in Panama during 1942 are shown in Table XV.

TABLE XV

Panamanian Highway Expenditures - 1942

Construction	
Inter-American Highway	$218,505.80
Secondary roads	363,364.94
Total	$581,870.74
Maintenance	
Inter-American Highway	$390,480.42
Secondary roads	42,165.60
Trans-Isthmian Highway	535.68
Total	$433,181.70
Grand Total	$1,015,052.44

In Table XVI is shown the budgeted expense for highway work in Panama in 1943.

TABLE XVI

Panama Highway Budget - 1943

Construction	
National Highways	$ 90,000.00
Feeder Roads	485,760.00
Unallocated funds for the construction of piers and emergency work	250,898.00
Total	$826,658.00
Maintenance	
National Highways	$245,742.00
Feeder Roads	52,520.00
Permanent expenses	255,080.00
Total	$523,342.00
Grand Total	$ 1,350,000.00

In 1938, $118,000 was spent on construction and $85,000 was spent on maintenance in the Panama Canal Zone.

There are several sources of funds in the Republic of Panama, among which are gasoline taxes, road taxes, and services rendered. As regards the ordinary taxes such as taxes on vehicles, gasoline and licenses, there are none in the Canal Zone. All expenditures in the Canal Zone are made from direct appropriations of the United States Government. In 1938, $203,000 was appropriated and the same amount was budgeted in 1939.

MATERIALS AND EQUIPMENT

Asphalt - Cement

Prior to the outbreak of European hostilities the bulk of cement used in the Republic came from Belgium and Norway but with the consequent disruption in shipping the trade shifted to the United States. There is no cement or asphalt manufactured locally whatsoever. In 1939, cement imports were valued at $222,998; the United States ranked first in value but third in quantity, Belgium and Norway both supplying more tonnage. In 1940, the United States shipped 141,938 barrels (1 bbl. equals 376 lb.) of cement to the Republic, this representing virtually the entire supply. In 1940, 236 tons of asphalt valued at $4,887 were shipped to the Republic of Panama. All asphalt and cement used in the Canal Zone is brought in from the United States. In 1940, 1,326 tons of asphalt valued at $25,941 and 481,065 barrels (376 lb. equals 1 bbl.) of cement valued at $905,096 were supplied. It is anticipated that a $750,000 cement plant will be built at an early date.

MACHINERY AND EQUIPMENT

Practically all road building machinery and equipment is purchased in the United States. Machinery of the value of $18,000 was purchased in 1938. That bought in 1939 consisted largely of replacements. As evidenced by Table XVII, 1940 set a high mark in the purchase of equipment in the Republic and Canal Zone.

TABLE XVII

Exports of Road Machinery to Panama and Canal Zone from United States - 1939 and 1940

Items	PANAMA				CANAL ZONE			
	1939		1940		1939		1940	
	Number	Dollars	Number	Dollars	Number	Dollars	Number	Dollars
Excavators, including power shovels	1	18,937	---	---	8	158,400	---	---
Excavators, parts and accessories	---	13,849	---	9,732	---	9,466	---	76,639
Concrete mixers	11	6,823	17	21,663	27	98,311	102	118,361
Road rollers	---	---	---	---	---	---	12	40,948
Road graders	1	686	7	15,482	2	4,550	8	23,188
Road scrapers	---	---	6	22,993	---	---	43	142,417
Bulldozers, angle dozers, trail builders, brush cutters and similar equipment	---	---	4	6,768	---	---	21	29,653
Other roadmaking equipment and parts	---	13,383	---	48,844	---	2,474	---	30,805

In Table XVIII is shown the Road Building Machinery on hand and its present condition.

Make	Year	Type	Capacity	Number	From	Condition
"Galion" Roller	1941	R25191	12 tons	1	U.S.	Good
"Buffalo" Roller	1921	10347	12 tons	1	U.S.	Poor
"White" Truck	1941	Dump	5 tons	24	U.S.	Good
"White" Truck	1941	Flat	5 tons	4	U.S.	Good
"White" Truck	1940	Tank	1,626 gal.	1	U.S.	Good
"G.M.C." Truck	1929	Tank	1,626 gal.	1	U.S.	Poor
"Mack" Truck	1928	Dump	3 tons	4	U.S.	Poor
"Ford" Truck	1934	Dump	1-1/2 tons	1	U.S.	Poor
"Ford" Truck	1935	Dump	1-1/2 tons	2	U.S.	Poor
"Ford" Truck	1937	Dump	1-1/2 tons	3	U.S.	Poor
"Ford" Truck	1938	Dump	1-1/2 tons	1	U.S.	Poor
"Ford" Truck	1940	Dump	1-1/2 tons	7	U.S.	Poor
"Chevrolet" Station Wagon	1941	Pick-up	3/4 ton	6	U.S.	Good
"Ford" Station Wagon	1935	Pick-up	3/4 ton	1	U.S.	Poor
"Mogul" Road Scraper	1928	Tow	12 ft. wide	6	U.S.	Poor
"Galion" Road Scraper	1940	Motor	12 ft. wide	3	U.S.	Good
"Stover" Cement Mixer	1936	-	1/4 meters	1	U.S.	Poor
"Jaeger" Cement Mixer	1940	-	7 ft.	2	U.S.	Good
"Rex" Cement Mixer	1928	7-S	4 ft.	2	U.S.	(1)Poor (1)Good
"Ransome" Paver	1928	27-E	1 meter	1	U.S.	Good
"Koehring" Paver	1928	DU-294C	27 feet	1	U.S.	Good
"Buda" Mechanical Shovel	1928	300-A	1/2 yard	1	U.S.	Poor
"Northwest" Mechanical Shovel	1938	-	3/4 yard	1	U.S.	Poor
"Oswood" Mechanical Shovel	1929	-	3/4 yard	1	U.S.	Poor
"Bucyrus Erie" Scraper	1941	S-112	12 yds.	6	U.S.	Good
"Allis-Chalmers" Tractor	1941	Diesel HD-10	-	6	U.S.	New
"Caterpillar" Tractor	1938	60	With bulldozer	4	U.S.	Good
"Caterpillar" Tractor	1928	60	-	4	U.S.	Poor
"Caterpillar" Tractor	1928	Diesel R-D 4	-	2	U.S.	Poor
"Caterpillar" Tractor	1938	R-D 6	-	1	U.S.	Poor

Registration of Motor Vehicles

In Table XIX is shown the number of motor vehicles registered on January 1, of the years 1941 and 1942. The 1942 registration was a large increase over 1941.

TABLE XIX

Motor Vehicle Registration - 1941 and 1942

Type	Number 1941	Number 1942
Passenger cars	10,736	15,654
Busses	589	---
Trucks	756	3,650
Total	12,081	19,304

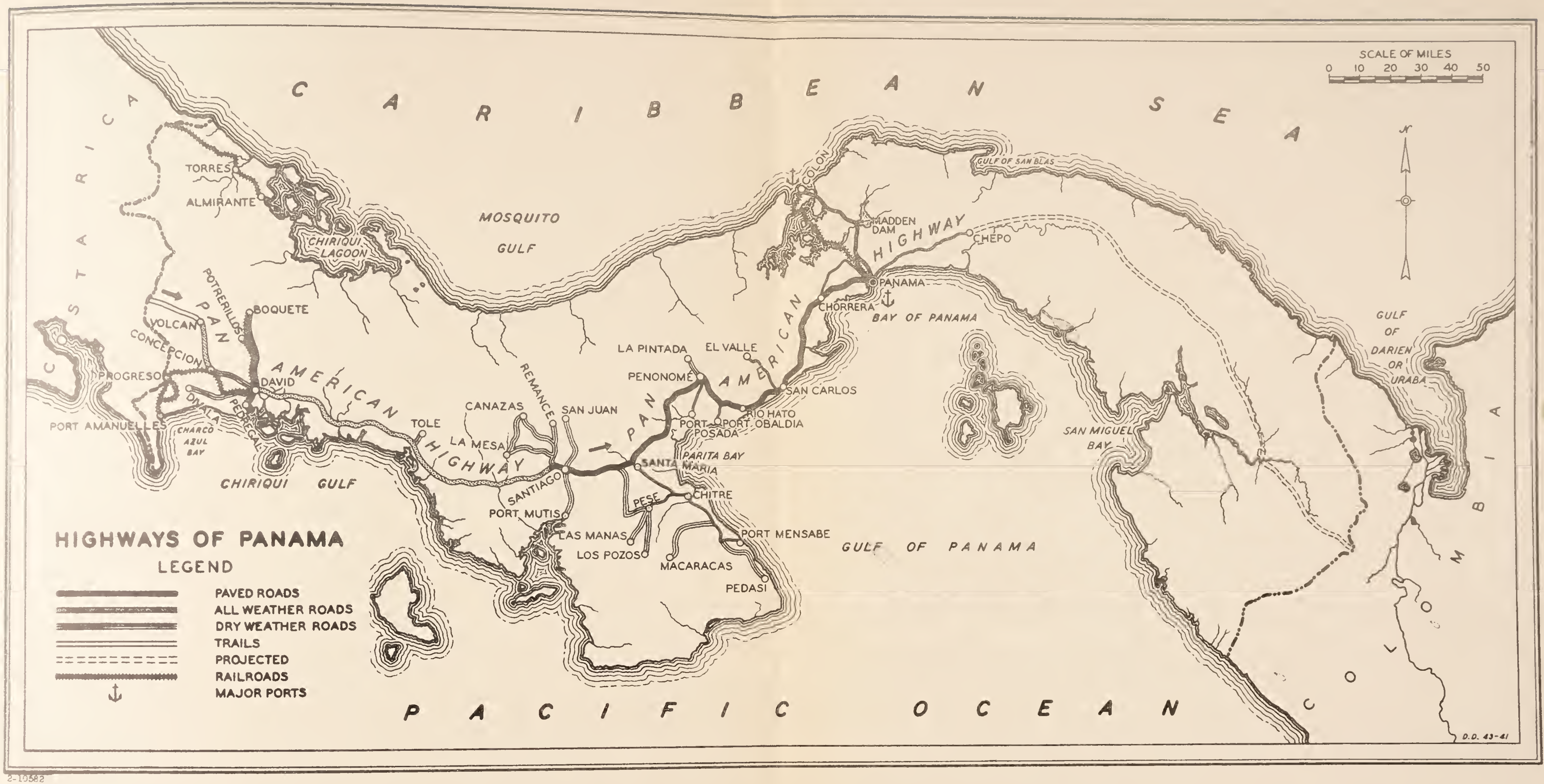
In 1943, motor vehicle registration consisted of those vehicles shown in Table XX, which is a different scheme than that shown in the previous table.

TABLE XX

Motor Vehicle Registration - 1943

Type	Number
Private cars	15,700
Commercial cars	3,700
Trailers	77
Motorcycles	147
Total	19,624

-0-



HIGHWAYS OF PANAMA

2-10582

AH-1-C-4

40

NOT FOR PUBLIC DISTRIBUTION

LATIN AMERICAN TRANSPORTATION SURVEY
HIGHWAY SECTION

7 6 49
3
Copy

c V-3

PART ONE

HIGHWAYS OF THE WEST INDIES

HAITI

AND

DOMINICAN REPUBLIC

Prepared by
U. S. Department of ~~of~~ Commerce
U S Bureau of Foreign and Domestic Commerce
Transportation Unit
for the
Office of Economic Warfare

October 1943.

Monograph ([illegible])

THE HIGHWAYS OF
HAITI AND
THE DOMINICAN REPUBLIC

Prepared by ELISHA E. EARLY

Under the Supervision of

B. P. ROOT

HE 359
.A2 L5
Docs 8/12/49

FOREWORD

This is the third of the series of highway studies covering Latin American countries which have been prepared for the Office of Economic Warfare by the Transportation Unit of the Department of Commerce. The two highway reports already issued are as follows:

Part One - Highways of Central America
Guatemala and El Salvador

Part Two - Highways of Honduras, Nicaragua,
Costa Rica and Panama

In addition to these highway reports a series of similar studies covering railways, ports and harbors, inland waterways, communications and power are in process most of which have already been published and may be secured for official government use either from the Office of Economic Warfare or the Department of Commerce.

John B. Crane, Chief
Transportation Unit
Department of Commerce
October 1943

vol. 3, pt. 1

CONTENTS

HAITI

Page

The Republic of Haiti 1
- Aviation 1
- Railways 2
- Geography and Climate 3
- Government 3
- Population 5
- Industry 5
  - Agriculture 5
  - Minerals 6
  - Manufacturing 6
- Imports and Exports 6
- Internal Transportation 6
- Conclusion 7

The Highways of Haiti 8
- Road Mileage by Construction Types 8
- Planning and Financing 8
- Materials and Equipment 9
- Main Highways 11
- Bridges 14
  - Viaducts 19
- Registration of Motor Vehicles in Haiti 19

Map: Highways of Haiti 21
Sources 22
Indexes 23

DOMINICAN REPUBLIC

The Dominican Republic 26
- Aviation 27
- Geography and Climate 28
- Government 29
- Population 30
- Industry 31
  - Agriculture 31
  - Cattle Raising 32
  - Minerals 32
  - Manufacturing 33

Imports and Exports 33
Conclusion 34

The Highways of the Dominican Republic 34
- Road Mileage by Construction Types 34
- Planning and Financing 36
- Materials and Equipment 36
- Main Highways 37
- Bridges 41
- Culverts 50
- Registration of Motor Vehicles in the Dominican Republic 50

Map: Highways of the Dominican Republic 52
Sources 53
Index 54

2-12717

HAITI

THE REPUBLIC OF HAITI
(La Republique D' Haiti)

The Republic of Haiti is located approximately fifty miles to the southeast of Cuba on the island of Hispaniola, a part of the West Indies. The territory of the island is shared by the Haitian and Dominican Republics. About one-third of the island is included in the territory of the Republic of Haiti.

Haiti is bounded on the north and the west by the Atlantic Ocean, on the south by the Caribbean Sea, and on the east by the Dominican Republic. Including the territory of its dependent islands, namely, La Tortue, La Gonave, Las Cayemittes, Ile-a-Vaches, La Navase, and La Grande Caye the area of the Republic embraces about 10,700 square miles.

One of the unique characteristics of the Republic of Haiti is that it is one of the few Negro nations of the world, and it is the only French-speaking republic in the Western Hemisphere. 1/

The monetary unit is the Gourde, which is equal to twenty cents in United States currency. In April of 1928 the National Bank of the Republic was granted authority to issue notes in denominations of 20, 50, and 100 gourdes. The objective sought in the issuance of these notes was to reduce the use of American currency. 2/

Port-au-Prince located at the easternmost point of the Gulf of Gonaives is the capital of the Republic. It is also the chief port and commercial center of the country, with an estimated population of 125,000. Other important cities are: Cap - Haitien (20,000), Aux Cayes (15,000), and Gonaives (20,000).

Despite its small area the Republic has fourteen seaports which carry on import and export trade. The more important of these ports are Port-au-Prince, Cap-Haitien, Aux Cayes, and Gonaives. Several American and European steamship lines call at these ports in normal times.1/

Aviation

Pan American Airways is the only commercial airline serving Haiti as such. The Haitian Government permits other airlines the use of its landing fields in cases of emergencies, but in so doing, they are neither allowed to take on nor discharge passengers or freight.

The schedule of Pan American Airways as of May, 1943, serving this area, and subject to change is as follows:

Sunday

Southbound via Port-au-Prince, two planes

Northbound " " " " three planes

Monday

Southbound via Port-au-Prince, three planes

Northbound " " " " two planes

Tuesday

Southbound via Port-au-Prince, one plane

Northbound " " " " three planes

Wednesday

Southbound via Port-au-Prince three planes

Northbound " " " " three planes

Thursday

Southbound via Port-au-Prince two planes

Northbound " " " " four planes

Friday

Southbound via Port-au-Prince four planes

Northbound " " " " two planes

Saturday

Southbound via Port-au-Prince three planes

Northbound " " " " three planes

Pan American Airways operates both land and sea planes in this area. As may be determined from the schedule previously shown, there are thirty-eight trips made weekly via Port-au-Prince, this number includes planes both north and southbound.

In the United States the main terminal of Pan American Airways is located at Miami.

Railways 3/

The railway facilities of the Republic are limited to one public carrier, the National Railroad of Haiti, which runs from Port-au-Prince to Verettes via St. Marc, a distance of 141 kilometers (87.6 miles). This railway is American-owned, and handles only a relatively small percentage of the total traffic of the country. The gage of the track is 1.067 meters (42 inches), and the equipment consists of 9 steam locomotives, 8 passenger cars, 38 freight cars, and 4 motor railcars. Although operating statistics for the National railroad are not available, it is reported that the ratio between receipts from freight traffic and passenger service is two-thirds and one-third, respectively. Passengers and freight are carried in mixed trains. Operating revenues are reported to be about $60,000 annually while expenses are approximately the same.

In addition to the common carrier railway mentioned above, there are two privately owned industrial railways, namely, Compagnie de Chemins de la Cul de Sac (P. C. S. Railroad), and the Compagnie Haitienne du Wharf. The first mentioned line has a total track-length of 100 kilometers (62 miles), while the latter has only 6,500 feet of track. Both industrial lines are of the 0.75 meter (30 inch) gage. 3/

GEOGRAPHY AND CLIMATE

Mountains dominate the entire landscape of the Republic of Haiti. Of the total area of the country 8,000 square miles are mountainous and only 2,700 square miles are plains. There are three principal mountain ranges with several large plains lying between them and along their outer fringes. One range, including the large groups known as La Hotte and La Selle, extends from easttto west along the lower peninsula, while the other two stretch from the southeast to the northwest across the mainland and northern peninsula. Even though the mountains are numerous and extend over almost two-thirds of the entire country, they are all of relatively low-altitude. The La Salle Mountain, located in the southeast section of the Republic, is the highest in the country, with an altitude of 8,790 feet. 1/

The plains occur irregularly along the coast, several of them penetrating the mountains for some distance inland. There are four plains of major importance: the North Plain, lying along the northern coast between the mountains and the sea; the Central Plain, a large interior level area bordering the Dominican Republic; and the Artibonite and Cul-de-Sac Plains, which spread eastward from the Gulf of Gonaives. 1/

There are numerous rivers, most of them short rapid streams. The largest of which is the Artibonite, which drains the Artibonite Plain into the Gulf of Gonaives. It is 147 miles from its headwaters in the Dominican Republic to its mouth on the Gulf. With the exception of the Artibonite no other river is large enough for navigation, however, they are important for irrigation purposes. 1/

The climate of Haiti is warm and equable. In the chief cities the yearly range of temperature is from 70 to 85 degrees Fahrenheit, with a variation of only three or four degrees between the summer and winter averages. It is fairly cool in the mountainous areas, but at no time have frosts been registered. The oppressive, humid heat, which is usually associated with tropical lowlands, is dissipated on the Haitian coasts by sea-breezes. 1/

The rains usually come in two distinct seasons: the first extending from April through June, and the second through October and November. 1/

GOVERNMENT

Since attaining its independence in 1804, Haiti has had several constitutions and governments. The constitution now in force was adopted by the National Assembly in 1935, ratified by plebiscite on June 2 of that year, amended by referendum on July 23, 1939, and proclaimed before the National Assembly the following August 8. According to the provisions of the constitution, the governmental structure is that of a democratic republic, and is divided into the three customary branches, legislative, executive and judicial. Administration of the local governments or communes is under the direct control of the President.

All Haitian citizens under the Constitution of 1935 are declared to be equal before the law. This situation is modified by the stipulation that naturalized citizens may not exercise their political rights until ten years after naturalization. On February 1, 1936, the Haitian Government enacted a law prohibiting foreigners and naturalized citizens from engaging in certain kinds of retail trade, principally those dealing in foodstuffs and textiles. 1/

The Constitution permits freedom of the press and religion, requires a secret electoral ballot, provides for universal suffrage for both men and women who have reached the age of 21, and prohibits the death penalty for political crimes other than treason. Under another article, primary education is obligatory, and free public instruction is offered through the secondary stage.1/

The legislative body, which convenes on the 15th of each January for three months, is composed of a Chamber of Deputies and a Senate. The two houses meet separately, but provision is made for special situation when they meet in a joint session and function as the National Assembly. The legislative body has the power to pass laws regulating all things concerning the public interest. Initiation of laws is shared with the executive branch, which reserves to itself the right to introduce bills providing for public expenditures. Although the legislature may approve or reject the national budgets, it may not increase them. Some primary functions of the National Assembly are: to enact constitutional amendments for subsequent popular ratification; to accede to or override presidential vetoes; to approve or reject treaties of peace or other international conventions submitted by the Executive; and to act as electors in the presidential elections. At the close of each legislative session, the National Assembly appoints, subject to executive approval, a Permanent Committee of six Deputies and five Senators whose function is to aid the President in formulating executive decree-laws issued between sessions of the legislation. 1/

Members of the Chamber of Deputies are elected by universal suffrage. Deputies must be 25 or more years of age, property owners, and residents of one of the communes of the arrondissement they desire to represent. There are 37 Deputies apportioned among the arrondissements, into which the departments are divided. 1/

The Senate is composed of twenty-one members, eleven of whom are elected by the Chamber of Deputies, and ten appointed by the President. The term of office for a Senator is six years; candidates must be 30 or more years of age, property owners, and residents of one of the communes of the department they desire to represent.1/

The executive power is vested in the president who is elected by the people for a term of five years. Although reelection is permitted, no citizen may hold the office for three terms, either consecutively or otherwise.1/

To quality for the office, presidential candidates must be native-born Haitians and sons of native-born Haitian fathers. In addition, they must be 40 or more years of age, and property owners. With the approval of the National Assembly the president has the right to declare war, negotiate international treaties, appoint and remove government employees, prepare the national budget, and in certain cases float internal loans. There is no provision for a vice-president. A Cabinet composed of five Secretaries and one Under Secretary assist the president in the performance of his governmental functions. These cabinet officers directly supervise the ten executive departments. 1/

The judicial branch of the government consists of a Court of Cassation (corresponding to the United States Supreme Court), civil courts and peace courts. The judges of each of these courts are appointed by the President. Justices for the Court of Cassation and for the civil courts are appointed for ten and seven years respectively, and are removable only through impeachment. The Court of Cassation resolves conflicts of jurisdiction among the lower courts and has jurisdiction over cases on appeal and cases involving the constitutionality of laws. A special court, the High Court of Justice, formed by the president of the Court of Cassation and the presidents of the Senate and Chamber of Deputies, exists for the sole purpose of trying impeachments of the President of the Republic, the Secretaries of State, and the members of the Court of Cassation. Charges can be brought only by the Senate upon the concurrence of two-thirds of its members.1/

Haiti is officially represented in the United States by a Minister and, also, by a number of consulates located in various cities. 1/

The United States is represented in Haiti by a Minister. There are also consular agents at Gonaives and Cap - Haitien. 1/

POPULATION

The population of the Republic of Haiti in 1937 was estimated at 3,000,000 inhabitants, or about 275 persons per square mile, a density greater than that of any other Republic in the Americas, and approximately equivalent to that of New York State. Most of the inhabitants live in the rural sections with only a small percentage residing in urban areas. Due to the scattered nature of the habitable areas in the country, the rural population is not evenly distributed, but is concentrated on the most productive mountain slopes and in the valleys. The most important population centers are the seaport cities.1/

The greater part of the inhabitants, possibly 90 percent, are of pure negro blood, while about 10 percent are mulattoes, descendants of former French settlers. The number of resident foreigners in the country is almost negligible, but these represent an important part of the merchant class.1/

INDUSTRY

Agriculture

Agriculture is the basic foundation of the economic structure of the Republic. Coffee is the principal export commodity, and the average annual production amounts to 31,800,000 kilos. Haiti's export quota of coffee for 1940-1941 under the Inter-Coffee Agreement was 602,000 bags (the United States taking 275,000). Other important products are cocoa, cotton and sisal. Due to the topography of the country, agriculture has developed in fairly distinct geographical zones.1/

Recently a huge rubber-growing project has been undertaken by the Haitian-American Development Corporation, a joint venture of the United States and Haiti, and financed by a loan from the Export-Import Bank of the United States. The name of the plant used in this rapidly expanding venture is the cryptostogia. It is hoped that by the end of 1944 a 10,000 ton rubber output maybe realized from this source. The entire output is to be purchased by the United States Rubber Reserve Company.

Sugar cane is grown and sugar represents a substantial proportion of the total exports. Bananas are also grown in large quantities. 1/

Minerals

Small amounts of mineral deposits have been found, among which are gold, silver, copper, iron, antimony, tin, sulphur, coal, nickel, gypsum and porphry. Haiti as yet has done nothing in developing its mineral resources. Should these deposits warrant it they might be developed, and a certain amount of income derived from them. 2/

Manufacturing

The development of manufacturing has been relatively slight. There are a few industrial establishments which are closely connected with the agricultural economy. One of these is a sugar refinery at Port-au-Prince, which produces raw or refined cane sugar and molasses for export. Several cigarette factories also are in operation. Among other industries are the manufacture of shoes, bricks, lard compounds, distilled spirits and liquors. There are several small shops engaged in the production of cabinets, and other household articles. In the past several years the processing and manufacture of sisal products have increased notably, and the output has found a ready market in the United States.1/

IMPORTS AND EXPORTS2/

The principal exports of the Republic in 1939-1940 were coffee, 16,188 metric tons valued at 2,048,698 dollars; raw cotton, 3,105 metric tons, valued at 609,660 dollars; cocoa, 1,220 metric tons; raw sugar, 29,856 metric tons, and sisal, 7,871 metric tons. During 1939-40 about 52 percent of the exports went to the United States, 27 percent to the United Kingdom, and 4 percent to France.

About 73 percent of Haiti's imports are furnished by the United States and about 9 percent by the United Kingdom. Among the leading imports of the country are cotton manufactured goods, foodstuffs, machinery and apparatus, mineral oils, and soap.

Internal Transportaion

Prospects for 1942-43 depend upon internal transportation to a great degree. In the past much has been made of the role of ocean transportation in the economic welfare of the Republic. Today, however, the problem of internal transportation is growing in importance and appears likely to become in the very near future its greatest single problem.

Overland trucking transportation has been showing an increase in the past several years. In 1940 there were 95 trucks operating in Haiti and in 1941 this number had increased to 128, but events since have greatly altered the situation. Lack of repair parts, a serious tire and tube shortage, and gasoline rationing have combined to reduce the number of usable trucks. The tire shortage has proved to be the most serious threat to the trucking business. A fairly new trucking service which carries goods from Port-au-Prince to San Pedro de Macoris for ultimate delivery to Puerto Rico, has drained nearly all the usable trucks from other services. Recent estimates have placed the total number of usable trucks at 25, of which 15 are now in service on the overland route. Thus 10 trucks are now attempting to do the work formerly done by 125.

Because of the necessity for conservation of tires, spare parts, and gasoline, the Department of State for Commerce and National Economy has announced the formation of a Committee for the Control of Tires and the Organization of Land Transportation. On February 25, 1943, regulations to control truck traffic were established. It was one of the first actions of the above named Committee to prohibit the moving of freight between port towns by highway. The hauling of cargoes by motor truck is restricted to inland areas and to movements between interior towns and seaports. The city of Jacmel is excepted from these regulations, being permitted to send about half its produce to Port-au-Prince by road. Jacmel is only 54 miles from Port-au-Prince by highway and 264 by sea, the difference between road and sea mileage being responsible for this exception.

Other modes of transportation used in the movement of commodities besides railways and highway vehicles are small boats, mule packs, and peasants carrying goods on their heads.

Due to the lack of railways, practically all overland movements of commodities utilize the highways. Even now despite the rationing of gasoline, tires, tubes, and automotive equipment, highway transportation is the backbone of the economic structure of the country.

CONCLUSION

Highways in Haiti are of the utmost importance to the Republic. With the limited railway facilities, and the lack of navigable rivers, Haiti is practically dependent on its roads for the moving of its agricultural commodities to shipping points, as well as a means of travel for the inhabitants. All of the principal seaports and towns are connected by highways, and bus routes have been inaugurated on the main roads.

Twenty years ago the only facilities for land transportation were trails. Today the roads of the country have been greatly improved, and all sections have highway connections.

The economic development of Haiti has been aided considerably through the improvement of the highways. These highways have given great aid to the war effort in the moving of strategic and other commodities. The highways also could be used in the movement of men and armament in case of invasion. Loans made by the Export-

Import Bank of the United States to Haiti to aid in financing the road building program have no doubt helped to expand friendly relations between the two countries. Road construction has afforded many of the inhabitants employment, and improved highway communication has unquestionably been a factor in the neighborly feeling that at present, exists between Haiti and the Dominican Republic.

Many sections of Haiti are still in a relatively primitive state where transportation facilities are limited to foot traffic or donkey pack, with the natives still carrying their products or other burdens on their heads. The improvement, of the present system of highways should be an important factor in future economic progress since the country has many latent possibilities awaiting development.

THE HIGHWAYS OF HAITI

Road Mileage by Construction Types

The roads and trails linking the various towns and cities of Haiti furnish an important means of transportation, enabling interior farms to send their produce to shipping ports and permitting a freer interchange of products among the different sections of the country.

It seems that a country so dependent on its roads for transportation would have realized their importance earlier, but this was not so with Haiti, as roads were almost non-existent twenty years ago. In Table I which follows, the types of roads are shown for the fiscal years 1940-41 and 1941-42.

TABLE I

Types of Roads in Haiti for the Fiscal Years 1940-41 and 1941-42

Types	1940-41 4/		1941-42 5/	
	Kilometers	Miles	Kilometers	Miles
Unimproved earth, non-surfaced, and trails, (Principally the latter)	43,867	27,258	43,985	27,331
Improved earth, sand, clay, gravel, etc.	2,532	1,573	2,624	1,630
Waterbound macadam	14	9	46	29
Macadam, surface treated and penetration	277	172	277	172
All other	none	none	none	none
Total	46,690	29,012	46,932	29,162

Planning and Financing 5/

The Department of Public Works has jurisdiction over the planning and financing of all roads.

Expenditures for the construction of roads for the fiscal year 1941-42 totaled 129,766 gourdes and for the maintenance of roads for the same period, 496,323 gourdes. In Table II which follows, expendutures for the construction of roads for the fiscal year 1941-42 are shown.

TABLE II

Expenditures for Construction of Roads for Fiscal Year 1941-42 5/

Government	86,039.12 gourdes
Standard Fruit Company	4,727.21 gourdes
Funds sequestered for national defense	38,999.21 gourdes
Total	129,765.54 gourdes

In Table III expenditures for the maintenance of roads for the fiscal year 1941-42 are shown.

TABLE III

Expenditures for the Maintenance of Roads for Fiscal Year 1941-42 5/

Government	486,317.91 gourdes
Standard Fruit Company	10,005.31 gourdes
Total	496,323.22 gourdes
Grand Total	626,088.76 gourdes

The road budget for the 1942-43 fiscal year (October 1 through September 30) anticipates expenditures of 556,675 gourdes ($111,335) for maintenance of roads and highways. There has been no appropriation made for new construction. The Department of Public Works has requested an estimated breakdown of 1942-43 expenditures for the construction and maintenance of roads, but as yet the information has not been received.

Materials and Equipment 5/

Haiti does not manufacture any cement. The Department of Public Works imported 5,000 sacks in 1941-42. Also imported by the Department were 52-gallon drums of asphalt. Present stocks of these materials are very low.

Road-building machinery and equipment owned by the Department of Public Work as may be noted in Table IV is considerable, and much privately owned equipment is in the hands of such companies as the Standard Fruit and Steamship Company of Haiti and the Societe Hatiano-Americaine de Development Agricole. No report of any machinery or equipment as being on order or in transit has been reported. In Table IV which follows, machinery and equipment are shown which the Department of Public Works has on hand, including that owned by private companies.

TABLE IV

Road-Building Machinery and Equipment on hand in The Department of Public Works and Private Companies 5/

Unit	Number	Year	Size or Type
Power shovel	1	1939	½ C.Y.
Power shovel	1	1930	1 C.Y.
Dump truck	1	1938	Special 2½ tons
Dump truck	3	1939	1½ tons
Dump truck	1	1940	1½ tons
Dump truck	3	1941	1½ tons
Dump truck	6	n.a.	1½ tons
Dump truck	3	n.a.	2½ tons
Stake body truck	1	1936	3 tons
Stake body truck	2	1938	1½ tons
Stake body truck	3	1939	3 tons
Stake body truck	1	1939	2½ tons
Stake body truck	2	1940	2½ tons
Stake body truck	2	1940	3½ tons
Stake body truck	1	1941	1½ tons
Stake body truck	1	1942	1½ tons
Stake body truck	1	n.a.	2½ tons
Stake body truck	4	n.a.	1½ tons
Tractor crawler	3	1935	61 H.P.
Tractor crawler	2	1936	61 H.P.
Tractor crawler	1	1936	95 H.P.
Tractor crawler	1	1939	25 H.P.
Tractor crawler	1	1940	20 H.P.
Tractor crawler	1	1932	n.a.
Tractor crawler	7	n.a.	T-20
Tractor crawler	1	n.a.	T.D.-35
Tractor crawler	3	n.a.	T.D-9
Concrete mixer	4	1939	3½ S-2 Bag
Concrete mixer	1	1940	½ Bag.
Concrete mixer	1	1940	1 Bag
Concrete mixer	1	1941	½ Bag
Rock crusher	1	1940	Steam portable 30 H.P.
Rock crusher	1	n.a.	Semi-portable
Grader crawler	2	1939	D-2 A-7093
Grader crawler	1	1939	#33 10 ft. blade
Grader crawler	1	1941	H. 511
Roller	2	n.a.	7 ton gasoline
Roller	1	n.a.	15 ton gasoline
Roller	1	n.a.	12 ton diesel
Roller	1	n.a.	12 ton V.M.gasoline
Roller	1	n.a.	7 ton diesel
Roller	1	n.a.	7 ton Model D-4400
Angle Dozer	1	1940	Type C Model C-7

Table IV continued.

Unit	Number	Year	Size or Type
Air Compressor	1	n.a.	Model 105-P.J.-2
Air Compressor	1	n.a.	Portable
Pump	4	1940	3 inch
Pump	1	1940	4 inch
Pump	1	n.a.	P-140-217
Pump	1	n.a.	N.C. D-410-218
Pump	4	n.a.	Hand diaphragm
Pile driver	1	1923	2 ton steam
Pile driver	1	1927	2 ton steam
Pile driver	1	n.a.	600 # x 1,000 # Hand
Grouting machine	1	n.a.	7 cubic feet
Rail	1,641 feet	n.a.	16# - 30 inch
Dump cars	8	1939	3/4 yd. side tip
Pipe molds	2	n.a.	42" x 36"
Pipe molds	8	n.a.	24" x 48"

Note: n.a. Not available.

MAIN HIGHWAYS 5/

There are 5 principal highways in Haiti shown in Table V.

Approximate Lengths of Main Highways throughout Haiti

From	To	Kilometers	Miles
Port-au-Prince	Ouanaminthe	348	216
Port-au-Prince	Rousselin	363	226
Port-au-Prince	Cap Haitien	228	142
Port-au-Prince	Saltrou	151	94
Fauche	Marigot	63	39

Port-au-Prince - Ouanaminthe 5/

The highway from Port-au-Prince to Ouanaminthe is a 6-meter, (19.6 feet), improved earth, all-weather road with a length of 348 kilometers (216 miles). From Port-au-Prince the route of the road is as follows: Croix des Missions, 8 kilometers (5 miles); Cabaret, 34 kilometers, (21 miles); Archaie, 46 kilometers, (29 miles); Mont Rins, 75 kilometers, (47 miles); St. Marc, 98 kilometers, (61 miles); Gonaives, 176 kilometers, (109 miles); Ennery, 206 kilometers, (128 miles); Plaisance, 230 kilometers, (143 miles); Limbe, 251 kilometers, (157 miles) Cap-Haitien, 277 kilometers, (172 miles); Limonade, 292 kilometers, (181 miles); Tron, 305 kilometers (190 miles); Terrier Rouge, 315 kilometers, (196 miles); Fort Liberte, 329 kilometers, (204 miles); finally to Ouanaminthe, 348 kilometers, (216 miles).

The road runs along the west coast of the country as far as Gonaives, and then goes inland a short distance to Ennery, from which point it goes almost due north to Cap-Haitien, and thence southeast to Ouanaminthe located near the border of the Dominican Republic.

Over this highway many agricultural commodities are shipped, and it may be very useful to the economic progress of the country, as well as to the war effort. It is a two-way road, and is considered one of the more important roads of the country.

Port-au-Prince - Rousselin 5/

Another of the main highways of Haiti is that from Port-au-Prince to Rousselin, 363 kilometers (226 miles). This road traverses the entire southern peninsular of the Republic. The physical characteristics of this road are the same as the highway from Port-au-Prince to Ouanaminthe. It is a 6-meter (19.6 feet) improved earth, all-weather road.

The route of the road follows: from Port-au-Prince to Carrefour, 8 kilometers, (5 miles); Gressier, 19 kilometers, (12 miles); Leogane, 32 kilometers, (20 miles); Fauche, 48 kilometers, (30 miles), Grand Goave, 53 kilometers (33 miles); Petit Goave, 66 kilometers, (41 miles); Miragoane, 92 kilometers, (57 miles); Vieux Bourg d'Aquin, 129 kilometers, (80 miles); Aquin, 135 kilometers, (84 miles); St. Louis du Sud, 155 kilometers, (96 miles); Cavaillon, 170 kilometers, (106 miles); Aux Cayes, 200 kilometers, (124 miles); Camp Perrin, 237 kilometers, (147 miles); Roseaux, 298 kilometers, (185 miles); Jeremie, 311 kilometers, (193 miles); Moron, 335 kilometers, (208 miles); Dame Marie, 362 kilometers, (225 miles); and finally to Rousselin, 363 kilometers, (226 miles).

The highway runs in a westerly direction from Port-au-Prince to Rousselin, which is located on the northwest corner of the southern peninsula of the Republic. It is a two-way highway.

Agricultural products are the principal items shipped over the road. It might be used as a defense route for the Republic in case of invasion by hostile forces.

Port-au-Prince - Cap Haitien 5/

This highway, running almost directly north, connects Port-au-Prince with' Cap-Haitien, a distance of 228 kilometers (142 miles). Physical conditions of the road are as follows: 6-meters (19.6 feet) in width, improved earth road with sections between Hinche and Dondon impassable during the rainy seasons.

The highway from Port-au-Prince is routed as follows: Pont Beudet, 18 kilometers, (11 miles); Thomazeau, 27 kilometers, (17 miles); Terre Rouge, 35 kilometers, (22 miles); Mirebalais, 57 kilometers, (35 miles); Lascahobas, 80 kilometers, (50 miles); Hinche, 132 kilometers, (82 miles); Pignon, 166 kilometers, (103 miles); Dondon, 192 kilometers, (119 miles); and finally to Cap-Haitien, 228 kilometers (142 miles).

Agricultural products furnish the bulk of commodities transported over this road.

Port-au-Prince - Saltrou 5/

A fairly important road to the country is the highway connecting Port-au-Prince with Saltrou located in the southeast part of the country on the Caribbean Sea. This road is 151 kilometers (94 miles) in length, and of improved earth, having a 6-meter width, and is an all-weather road, except for stretches near the Saltrou end.

The route of the highway is as follows: from Port-au-Prince; Croix des Bouquets, 15 kilometers, (9 miles); Gantheir, 38 kilometers, (24 miles); Fond Parisian, 50 kilometers, (31 miles); Fond Verrettes, 74 kilometers, (46 miles); and then to Saltrou, 151 kilometers, (49 miles).

The road besides serving as an artery for the moving of agricultural commodities, is of great importance for the transportation of materials useful to the war effort. It is a two-way road, as are all the highways of the Republic.

FAUCHE-MARIGOT 5/

The highway connecting Fauche with Marigot is in the southern peninsula and runs south and southeast. The road is quite short, being only 63 kilometers (39 miles) in length.

The route of the highway is as follows from Fauche; Trouin, 14 kilometers, (9 miles); Jacmel, 38 kilometers, (24 miles); and thence to Marigot.

It is a two-way highway as are all the roads of the Republic. In bad weather the road is practically impassable, as 15 kilometers, (9 miles) between Trouin and Jacamel run in a river bed, so that any important rise of the water level blocks traffic.

The principal use of the highway is as an overland route between Fauche and Marigot in transporting goods between those two points. Because of the short distance here, goods received at Marigot can be moved to Fauche in a very short time, weather permitting.

Bridges 6/

Due to the topography of the Republic of Haiti many bridges of all types are a necessity for the linking of the highways. In Table VI which follows are shown bridges of 10 meters* or more in length:

---

* 1 meter equals 3.28 feet.

TABLE VI

Bridges of 10 Meters or More in Length in the Republic of Haiti - South Department 6/

Road, Port-au-Prince - Cayes

Location	River or Ravine over which constructed	Distance from Port-au-Prince Kilometers*	Description	Length Meters
Brimballe	River Serpente	115.2	Slop-2 equal spans-Abutments and piers of concrete flooring	12.85
Morisseau	River Aquin	135.5	Metal framework-one span-stone abutments concrete flooring	27.80
St. Louis du Sud	River St. Louis	154.6	Slop 45° -3 truss 12.25 meters-abutments-2 piers and wings of concrete. Flooring and parapets in reinforced concrete	36.75
Cavaillon	Riv. Cavaillon	175.8	Metal framework-one truss abutments and wings of stone-Flooring T.T. locks	54.90
Islet	River Islet	194.2	Level bridge-metal frame work-abutments and wings of concrete. Reinforced concrete flooring.	19.40

Road, Jeremie - Chambellan - Dame Marie

Location	River or Ravine over which constructed	Distance from Dame Marie Kilometers	Description	Length Meters
Chambellan	Ravine Seche	25.0	Stone abutments-concrete flooring	20.00

North Department

Road, Ennery - Cap

Location	River or Ravine over which constructed	Distance from Cap Kilometers	Description	Length Meters
Passe Attie	River Plaisance	46.5	Abutments and 3 piers in concrete-4 spans wooden flooring	22.60

*1 kilometer equals 0.62 miles

Table VI continued.

Location	River or Ravine over which constructed	Distance from Cap Kilometers	Description	Length Meters
		North Department		
Camp Coq	River Camp Coq	36.0	Stone abutments-reinforced flooring of concrete	18.8
Garde Cognac	River Affluent Limbe	34.0	Stone abutments-reinforced flooring of concrete-concrete parapets	13.6
Cadiac	Ravine Cadiac	29.8	Stone abutments-wooden flooring 4 spans	18.90
Bois de Chene	Ravine Bois de Chene	variant 34.0	Stone abutments Reinforced flooring concrete	13.60
Christophe	River Limbe	24.5	5 spans of 75 feet-abutments and 4 piers in concrete	141.00
Road, Cap - Port Liberte				
Haut d'eau	River Haut du Cap	----	Concrete abutments Metal framework	50.30
Parois	Gde Riviere du Nord	11.8	Stone abutments-concrete arch and flooring	35.00
Trou	River du Trou	30.0	Cyclopean concrete abutments-metal arch-concrete flooring	45.75
Colette	River Colette	53.0	2 spans 9.60 meters brick abutments and piers	19.50
La Materie	River La Materie	62.7	3 spans 5.60 meters-concrete abutments and piers - concrete flooring	16.80

Table VI continued.

Location	River or Ravine over which constructed	Distance from PORT-AU-PRINCE Kilometers	Description	Length Meters
Road, Cap - Port-Liberte				
Porte Canal	River Pte. Canal	67.0	(5 spans - stone piers -) (concrete flooring)	18.45
River Sable	River Sable	69.0	(3 spans - abutments of) (2 piers of brick) (wooden flooring)	17.25
Canarie	River Canarie	71.0	(3 spans of 3.60 meters) (concrete abutments and) (flooring)	10.80
Road, Carrefour Menard - Dondon				
		Distance from Carrefour Kilometers		
Bouyaha	River Bouyaha	25.0	(Stone abutments, concrete) (flooring, metal girders)	18.85
Road, Gonaives - Dessalines		From ~~Govaines~~ GONAIVES		
La Quinte	River La Quinte	5.0	( ) (Metal truss - work -) (concrete flooring)	15.60
La Couleuvre	River La Couleuvre	24.0	(Domestic wood - 3 spans) (bad condition)	12.00
Estere	River Estere	26.0	(Steel Pratt truss - 2) (spans with approach of) (13.50 meters)	78.00
Road, Gonaives - Ennery				
La Quinte	River La Quinte	8.0	(Reinforced concrete 6) (spans of 5 meters)	30.00
Ennery	River Ennery	28.0	(Warrent truss -) (concrete flooring)	27.00
Road, Gonaives - Gros Morne				
Trois - Rivieres	Riv. Tr. Rivieres	28.0	(Trough plate girder -) (spans of 22.50 meters	45.00

Table VI continued.

Northwest Department

Road, Port-de-Paix - Anse a Foleur

Location	River or Ravine over which constructed	Distance from Port-Paix Kilometers	Description	Length Meters
Port-de Paix	Riv. Port-de-Paix	---	(Stone abutments - Frame and flooring of wood)	13.2

The Western Department

Road, Carrefour-Bourepose-Hinche

Location	River or Ravine over which constructed	Distance from Port-au-Prince Kilometers	Description	Length Meters
Fer-a-cheval	Riv. Fer-a-cheval	67.0	(Stone abutments, 2 concrete piers, 3 spans)	68.60
Lascahobas	River Lascahobas	80.0	(Metal frame - abutments of stone - reinforced concrete flooring)	21.30
Dessalines	River Artibonite	85.0	(Metal bridge - 4 spans reinforced concrete piers and flooring)	91.50
Grand Peligre	Rav. Gd. Peligre	96.60	(Stone abutments - concrete flooring - steel frame)	27.80
Thomonde	River Thomonde	105.50	(Stone abutments - concrete flooring - steel frame)	27.80
Stenio Vincent	River Guyamone	128.0	(Stone abutments - concrete piers - suspension bridge)	137.25
Road, Port-au-Prince-Mont Rouis				
Crois des Missions	River Grise	8.0	((Stone abutments - 2 stone piers-3 spans-continuous beam)	61.00
Bethel	River Bethel	34.2	(Stone abutments-steel covered girders-concrete flooring)	10.70

Table VI continued.

Location	River or Ravine over which constructed	Distance from Port-au-Prince Kilometers	Description	Length Meters
Pongeolles	Ravine Pongeolles	47.0	Stone abutments - concrete flooring -steel covered girders -concrete flooring (sloping	10.40
Pras	Ravine Pras	49.1	2 spans - stone abutments - concrete piers and flooring	13.40
Road, Port-au-Prince-Aquin				
Bois de Chene	Ravine Bois de Chene	----	2 arches 5 meters - abutments and arches in concrete	10.00
Carrefour	Froide	8.6	Steel - stone abutments	11.70
Momance	Momance	27.7	Steel - 3 spans - stone abutments	70.00
Road, Miragoane - Anse-a Veau				
Anse-a-Veau	Anse-a-Veau	126.0	Concrete flooring - abutments-parapets-steel covered girders	13.40
		Jacmel District		
Road, Jacmel - Trouin				
Gasseline	Gasseline	1.6	Steel lattice - stone abutments	28.28
Grande Riviere	Grande Riviere	2.5	Steel lattice - stone abutments (not in service since cyclone of 1935	28.28
River Gauche	River Gauche	3.5	Steel lattice - stone abutments (not in service since cyclone of 1935	28.28
Big Nose	River Gauche	8.0	Concrete (not used)	11.89

Table VI continued.

Location	River or Ravine over which constructed	Distance from Port-au-Prince Kilometers	Description	Length Meters
		St. Marc. District		
Road, Montrouis - St. Marc				
Montrouis - River Mt. Rouis		74.1	(Steel - 2 spans 75 feet) (stone abutments -piers) (wall, wing of concrete)	45.7
Pierre - River St. Marc		97.0	(Stone abutments (concrete flooring	13.8
Latour - Ravine Latour		109.0	(2 spans - steel girders (wooden flooring, piers (and abutments	90.8

There are also a large number of smaller bridges of all types whose length areless than 10 meters. These, however, have not been included in the above table, but information regarding the location, description, and length is available in the Transportation Unit of the Bureau of Foreign and Domestic Commerce.

Viaducts 6/

There are no viaducts on the roads in the Republic. The country's single underpass is located a few miles north of St. Marc, and has clearance for ordinary trucks and busses.

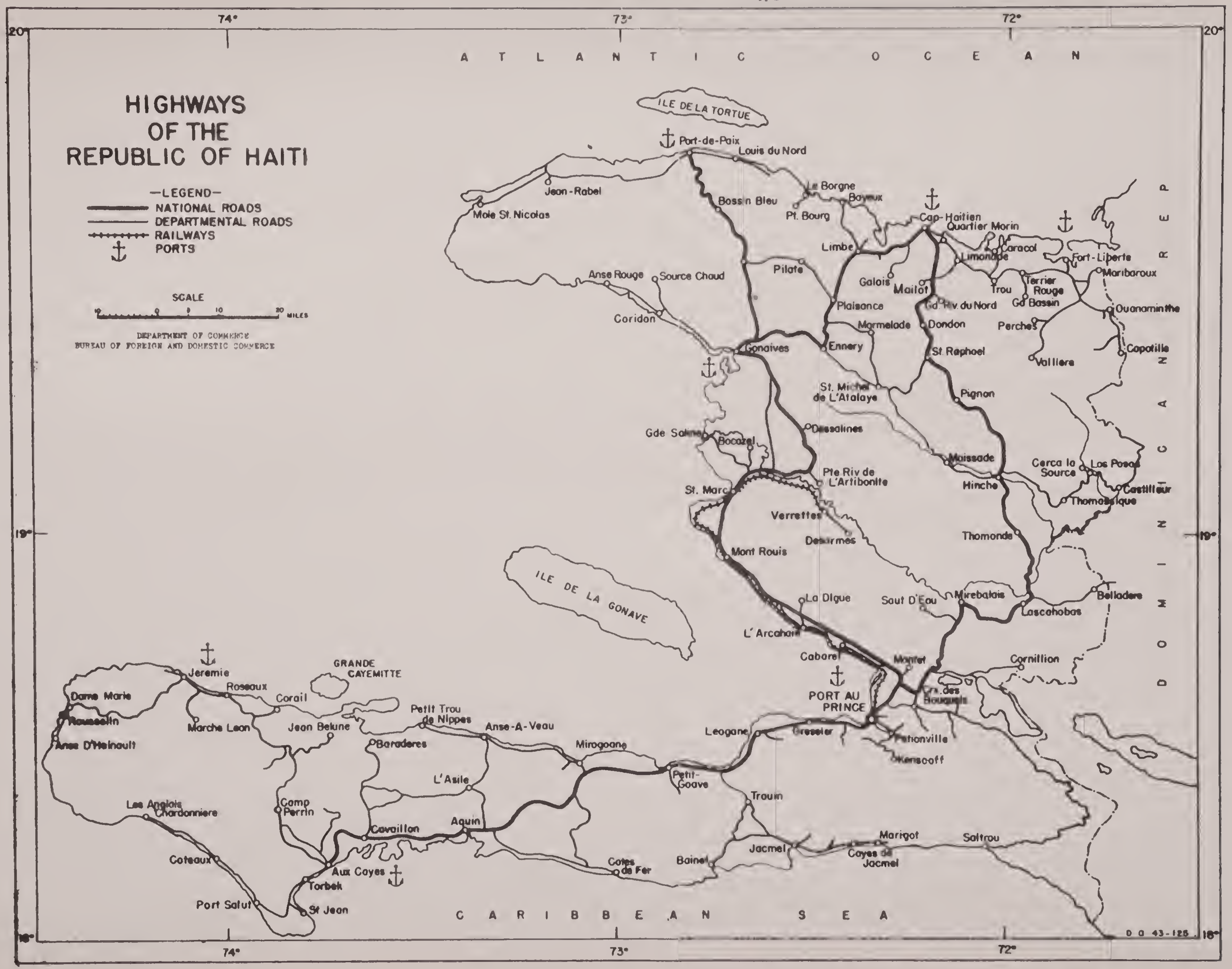
Registration of Motor Vehicles in Haiti 7/

Haiti being dependent on its highways for the bulk of its transportation has a considerable number of motor vehicles registered. Since the war, however, and with the rationing of gasoline and tires, automotive traffic has decreased. In Table VII, which follows the number of motor vehicles registered in Haiti as of January 1, 1931, 1937, and 1941 are shown by types.

TABLE VII 7/
MOTOR VEHICLE REGISTRATIONS IN HAITI AS OF JANUARY 1, 1931, JANUARY 1, 1937 AND JANUARY 1, 1941

		Passenger Cars		Buses			Diesel trucks and	
Year	Private	For Hire	Government		Private	Govt.	buses	Total
1930 7/	2,384	---	---	277	371	---	---	3,032
1936*	2,600	---	---	280 (priv.)	300	---	----	3,180
1940 7/	1,337	29	100	Not registered separately	507	245	2	2,485

* Estimated



HIGHWAYS OF THE REPUBLIC OF HAITI

—LEGEND—
NATIONAL ROADS
DEPARTMENTAL ROADS
RAILWAYS
PORTS

DEPARTMENT OF COMMERCE
BUREAU OF FOREIGN AND DOMESTIC COMMERCE

2-12717

SOURCES

HIGHWAYS OF THE REPUBLIC OF HAITI

1/ AMERICAN NATION SERIES #11:
Pan American Union, 1942.

2/ THE STATESMANS' YEAR BOOK, 1942.

3/ RAILWAYS OF CENTRAL AMERICA AND THE WEST INDIES:
By W. Rodney Long, 1925.

4/ HIGHWAY STATISTICS FOR THE REPUBLIC OF HAITI:
Prepared by Robert S. Folsom, American Vice Consul,
July 7, 1941.

5/ HIGHWAY STATISTICS FOR THE REPUBLIC OF HAITI, FISCAL YEAR
1941-42, prepared by William A. Krauss, American Legation,
December 16, 1942.

6/ BRIDGE INFORMATION PREPARED BY William A. Krauss,
American Legation, January 30, 1943.

7/ INDUSTRIAL REFERENCE SERVICE:
U. S. Department of Commerce, August 1941, Report #39.

INDEX

HIGHWAYS OF THE REPUBLIC OF HAITI

A	Page
AIR SERVICE	1
Pan American	1
B	
Bridges	14
C	
Cities	1
Climate	3
Conclusion	7
E	
Equipment	9
Exports	6
F	
Financing of Road Building and Repair	8
G	
Geography	3
Government	3
Executive	4
Judicial	5
Legislative	4
I	
Imports	6
Industry	5
Agriculture	5
Manufacturing	6
Minerals	6

	Page
M	
MAIN HIGHWAYS	11
Fauche to Marigot	13
Port-au-Prince to Cap Haitian	12
Port-au-Prince to Ouanaminthe	11
Port-au-Prince to Rousselin	12
Port-au-Prince to Saltrou	12
Monetary Unit	1
Motor Vehicle Registrations	19
P	
Planning of Road Construction and Repair	8
Population	5
Ports	1
R	
RAILWAY FACILITIES	2
Industrial	3
Compaigne Haitienne du Wharf	3
P. C. S. Railroad	3
National Railroad of Haiti	2
Road Mileage	8
Road Types	8
V	
Viaducts	19

DOMINICAN REPUBLIC

The Dominican Republic
(La Republica Dominicana)

The Dominican Republic is located on the Island of Hispaniola which comprises a part of the West Indies or the Greater Antilles Islands. Hispaniola is entirely occupied by the Republic of Haiti and the Dominican Republic. About one-third of the Island is made up of Haiti and the other two-thirds of the Dominican Republic. The Island lies east of Cuba and west of Puerto Rico. Bounding the Republic are the Atlantic Ocean on the north and the east, the Caribbean Sea on the south and the Republic of Haiti on the west.1/

Including its adjacent islands the area of the Republic is 19,332 square miles, which is slightly larger than the combined areas of Vermont and New Hampshire. 2/

Spanish is the native tongue of the Republic. 3/

In July 1897, the United States gold dollar was adopted as the standard of value, and United States currency circulated as legal tender. By legislative acts in 1937, provision was made for the minting of silver coins in denominations of 1 peso, 1/2 peso, 25 centavos, and 10 centavos; nickel coins of 5 centavos, and copper one centavo pieces. With the circulation of the new coins in 1938, the United States coins, and those of previous local issue were withdrawn from circulation. The United States paper currency, however, continues to circulate on a parity with the new coinage.3/

Ciudad Trujillo, the capital, was founded on the Ozama River where it empties into the Caribbean Sea. The original name was Santo Domingo, but after the cyclone of 1930, which razed the city, it was reconstructed under the direction of President Trujillo and was subsequently named in his honor. In addition to being the capital of the Republic, Ciudad Trujillo is the chief port of the country and the gateway through which most of the foreign commerce passes. Its population according to the census of 1935 was 71,297.1/

Other important cities of the Republic include: Santiago de los Caballeros, with a population of 33,919; San Pedro de Macoris, with 18,889; Puerto Plata, with 11,777; La Romana, with 10,935; and La Vega, with 9,342. All of the preceding population figures are as recorded by the census of 1935.3/

The major ports are Ciudad Trujillo, San Pedro de Macoris, and Puerto Plata. Ports of lesser importance are Azua, Barahona, La Romana, Monte Christe, Samana, and Sanchez. The first mentioned ports are those dealing with ocean going traffic, while the latter are accessible only to smaller vessels.1/

Railways play a minor part in the transportation facilities of the Republic. There are two common carrier railways, the Ferrocarril Central Dominicana (Central Dominican Railway) and the Ferrocarril de Samana y Santiago (Samana-Santiago Railway). They are owned and operated by the Dominican Government.

The Central Dominican Railway is a 0.76 meter (30 inch) gage line with a total route length of 103 kilometers (64 miles). It connects Puerto Plana with the inland towns of Santiago and Moca.

The equipment of the line consists of 8 locomotives, 4 passenger cars, 128 freight cars, and 5 motor rail cars. The average annual volume of freight is approximately 27,500 metric tons, and the average number of passengers carried annually is approximately 2,500.

The Samana-Santiago Railway is a 1.067 meter (42 inch) gage line with a total route length of 115 kilometers (71.4 miles). It connects Samana with the interior towns of Sanchez, San Francisco de Macoris, La Vega, Salcedo, and Moca. The average annual volume of freight traffic on this line is approximately 25,000 tons, and the number of passengers carried annually averages approximately 5,500.

In addition to the common carrier railways there are 19 privately owned industrial railways with an aggregate track length of 1,032 kilometers (642 miles). The operations of these lines are confined exclusively to the individual plantations or industries which they serve.4/

Aviation8/

Air transportation in the Dominican Republic is comprised of the operations of three companies, namely, Pan American Airways, Inc., British West Indian Airways, Ltd., and K. L. M. (Koninklijke Luchtvaart Maatschappij).

Pan American Airways, Inc., is the oldest and best equipped company serving this area, having first started in 1929. The other two companies are more recent origin, British West Indian Airways, Ltd., having inaugurated service in July, 1942, while the exact date K. L. M. began operating is not known.

Service by the Pan American Airways, Inc. consists of fourteen planes per week each way. The schedule is as follows:

Miami-San Juan, daily each way
Miami-Antigua-Port of Spain-Para-Natal route,
    Southbound, Monday
    Northbound, Wednesday
Three planes weekly on Miami-San Juan-Port of Spain-Natal route,
    Southbound, Tuesday, Thursday, Saturday
    Northbound, Thursday, Friday, Sunday
Three planes weekly on Miami-Antigua-Port of Spain-Belem (Para)route,
    Southbound, Sunday, Wednesday, Friday
    Northbound, Wednesday, Saturday, Monday

The schedule as of June 1, 1943 for the West Indian Airways, Ltd., consists of two planes weekly each way, southbound on Monday and Friday, and northbound on Tuesday and Saturday. Miami serves as the terminal for this company.

An irregular passenger and express service is maintained by the K. L.M. although no definite schedule is yet in force on this line, an average of three to five trips are made monthly. The company operates from Miraflores airport in Ciudad Trujillo to Willemstaad, Curacao.

Geography and Climate

The Dominican Republic comprises the eastern two-thirds of the Island of Hispaniola. Its surface is broken by four almost parallel mountain ranges, all of them covered by thick foliage. Of these, the Cordillera Central, dividing the Republic into almost equal parts and extending into Haiti, is the largest. It is the chief watershed of the country, determining the direction of most of the rivers. Monte Trujillo is located in this range; it is the highest peak in the West Indies, having an altitude of 10,417 feet. In the north, the Cordillera Septentrional runs from Monte Christi in the northwest across to the tip of Samana Peninsula. In the south there are two smaller ranges: the Sierra de Neiba, which follows a northwesterly line from the Bay of Neiba; and the Sierra de Bahoruco, which extends through the center of the southern peninsula. The country takes its outstanding physical characteristics from these four wooded elevations.

The largest and most important of the valleys and plains is the Ciabo Valley, which lies between the Cordillera Central and theCordillera Septentrional This valley has a length of 140 miles and a width varying between 9 and 28 miles. It is an important center of agriculture, thickly settled, progressive and prosperous. The Vega Real (Royal Plain) located in the eastern part of the valley, has an unusually high degree of fertility. The average annual rainfall varies from 47 inches at Moca to 92 inches at San Francisco de Macoris.

A part of the Central Plain of Haiti extends across the border into the Dominican Republic as the San Juan Valley, and lies between the Cordillera Central and the Sierra de Bahoruco. The Dominican sector is approximately 50 miles long and from 9 to 13 miles wide. Rainfall in this section is heavy and is evenly distributed. This valley is described by visitors as possessing remarkable natural beauty and fertility.

Extending down to the Bay of Ocoa in the south is the hot semi-arid Azua Plain. This plain has an average annual rainfall of 29 inches, but most of it occurs in the form of torrential storms between May and October and is of little benefit to agriculture. The soil, however, is fertile, and responds readily to irrigation.

Lake Enriquillo, located in Enriquillo Basin, which lies between the Sierra Neiba and the Sierra de Bahorucco, is 144 feet below sea level. It is constantly receding due to evaporation, and the water is saltier than that of the sea.

The principal cities are located between the Cordillera Central and the southern coast. In this area sugar is grown extensively along with other adaptable crops.

Even though the country is wholly within the torrid zone a temperature of 90 degrees is seldom exceeded. The average annual temperature of the coast cities is approximately 78 degrees. Temperature during the different seasons varies very little. Inland it is ordinarily cooler, temperatures varying according to altitude. Approximately two-thirds of the rainfall comes during the rainy season, which is between May and December.

The coast line is some 940 miles long, being lengthened by three peninsulas. In the national territory are included the islands of Saona, Catalina, Catalinita, Beata, and Alto Velo.

River transport is a minor item of traffic, the principal use of the rivers being for irrigation purposes. Some of the larger rivers are as follows: The Yaque del Norte, the Yuna, the Artibonite, the Ozama, and the Macoris. All of these rivers rise in the Cordillera Central.1/

Government1/

In the political life of the Dominicans, the constitution has never been regarded in the same light as that in which it is commonly considered among English-speaking peoples. The Dominicans have a tendency to center their political institutions around the personalities of the leaders, rather than on an abstract charter of government. As might be ascertained from the preceding statements, the people of the Republic do not regard the constitution with the same degree of sanctity as peoples of certain other countries.

Since the beginning of the Republic in 1844 many changes have been made in the constitution. Today the country is governed under the constitution of 1892, which has been revised many times, the last of which was June 9, 1934.

In the 1934 revision of the constitution it declares that the government is civil, republican, democratic, and representative, and provision is made for the usual separation of powers into legislative, executive and judicial branches, prohibiting the delegation of functions by any one of them.

The legislative authority is exercised by the Congress, which is composed of a Senate and a Chamber of Deputies. Members for the Congress are elected by direct vote for terms of four years. The Federal District and each province are represented by one senator. To be eligible for the office of a senator, a candidate must be 35 years of age. Some of the powers of the senate are to appoint members to the judicial bodies, to hear impeachment proceedings against public officers, and to carry out various other important procedures.

In the Chamber of Deputies, the election of members is governed by the population of the provinces. One member represents each 30,000 persons or fraction thereof not less than 15,000, provided that no province may have fewer than two deputies. A deputy must be at least 25 years of age. Legislative immunity is granted all members of Congress while they are in office.

Initiation of bills or proposals for legislation may be exercised by the Executive and the Judiciary, as well as by the Congress, and a bill to become a law must be approved by both houses. War may be decreed only by the Congress.

The president and vice-president, who head the executive branch of the government, are elected for terms of four years by direct vote. As in the United States, the president is commander-in-chief of the armed forces of the country, is responsible for protecting the nation from foreign attack, and declares and conducts any war decreed by the Congress. Other duties of the president are to appoint temporary officials to fill vacancies in the judiciary and in local governments, and to submit to the Congress the schedule of the annual budget. The vice-president presides over the Chamber of Deputies and, in case of disability of the president, he succeeds to that office. To be eligible for their respective offices both the president and the vice-president must be 35 years of age or more.

The president is assisted in his executive functions by Secretaries who, as heads of executive departments, serve in capacities similar to those of the cabinet of the President of the United States. These executive assistants include: The Secretary of State; The Secretary of Interior, Police, War and Navy; The Secretary of the Presidency; The Secretary of Foreign Relations; The Secretary of Treasury and Commerce; The Secretary of Agriculture, Industry and Labor; The Secretary of Communications and Public Works; The Secretary of Sanitation and Welfare; and The Secretary of Justice, Public Education and Fine Arts. The President of the Administrative Council of the District of Santo Domingo is also a member of this executive body, each of whom is responsible directly to the President.

Judiciary powers of the country are vested in a Supreme Court of Justice, appellate courts, courts of first instance, mayoral courts or alcaldias and such other judicial bodies as may be created by law. State and municipality questions, and appeals from the appellate courts, are handled by the Supreme Court. There is a mayoral court in each district, of which Ciudad Trujillo has three and Santiago two. The appellate courts are located in Ciudad Trujillo, Santiago and La Vega, while courts of first instance are located in each province.

The Dominican Republic has 15 administrative provinces, being further subdivided into districts. Each of these provinces has a governor who is elected by a direct vote for a term of office of four years. Each district is under the jurisdiction of a council whose members are elected by a direct vote, in proportion to the population of the district.

Ciudad Trujillo and its environs comprise the District of Santo Domingo, which is governed by an administrative council. This council is composed of a chairman, a vice-chairman, and eight members all of whom are appointed by the president for four year terms.

Suffrage is granted to all male Dominicans who are married, or who are 18 years of age, with certain specific exceptions in the cases of members of the armed forces of the country, and of citizens who have been found guilty of treason, or who are under sentence for the commission of a crime.1/

Population1/

At the close of 1939 the official estimated population of the Dominican Republic was 1,654,993, or approximately 86 persons per square mile. The 1939 figure represents a notable growth during the last century. In 1824 the population was about 54,000, increasing to almost 900,000 in 1921 when the first official census was taken. The census of 1935 showed a population of 1,478,121. Numerous races make up the population, including negroes, mestizos and whites, with a small number of orientals. The most important foreign groups present in the Republic are the Haitians, English, Puerto Ricans, Spanish, North Americans, and Arabs.

At the time of the 1935 census nearly five-sixths of the population lived in rural sections. Towns are numerous but small.

In Table I which follows, the population by provinces is shown according to the official estimate of 1939.

Table I.

Population by provinces as estimated officially for 1939.1/

Province	Population
Santiago	217,861
La Vega	187,383
Seybo	149,447
Duarte	123,700
Puerto Plata	121,495
Benefactor	114,708
Trujillo	114,217
Barahona	102,892
District of Santo Domingo	99,273
Espaillat	94,361
San Pedro de Macoris	75,047
Azua	68,462
Monte Cristi	65,878
Monsenor Merino	58,797
Libertador	33,451
Samana	28,021
Total	1,654,993

Industry 1/

Agriculture:

The Dominican Republic is predominantly an agricultural country. Although much of the land cannot be cultivated because of its mountainous nature, the valleys and lowlands, however, are uniformly fertile. The economy of the Republic is built around its many agricultural resources. At the time of the last agricultural census, in 1935, there were about 210,000 farms having a total area under cultivation of 2,300,000 acres and giving employment to 476,000 workers.

Most important of the crops grown in the Republic is cane sugar, which comprised almost three quarters of the total value of exports in 1940. In the crop year 1939-40 the production of raw sugar totaled 454,836 metric tons, and the country has in recent years ranked fourth among the Latin American Republics as a sugar producer. The lowlands are adapted to its cultivation and as a result plantations and mills are found in all sections of the country.

Cocoa is second to sugar in importance as an agricultural commodity, and ranks second among the exports of the country. The cultivation of cocoa is carried on in the northern and eastern provinces. In these areas the rainfall is heavier, although in the southwestern part of the country the use of irrigation is expected to increase the output in that section.

Coffee, tobacco, corn and a variety of fruits are among the other agricultural products grown.

In recent years, the government has taken steps to stimulate agriculture, and to cooperate in every way with the people in order that economic independence in the basic food requirements of the country may be more nearly achieved.

Another important feature of the agricultural program is the stress on the importance of diversification of crops. To alleviate the great dependence on the sugar crop other crops are being grown and increased in quantity. Some of these are rice, cotton, and bananas. At attempt also has been made to develop commercial lumbering in the Republic, but due to the difficulty in transporting the lumber to markets and to shipping points this industry has not progressed rapidly.

Cattle Raising:

The raising of cattle in the Republic is not new. After a lull for many years in stock raising in the country now, however, with better transportation facilities, and with a meat-packing plant at Ciudad Trujillo the activity in this field is taking on new life. The principal breeds of cattle are Holstein and Puerto Rican strains crossed with native stock. There are other breeds being introduced by the importation of pureblood breeding animals. The number of animals slaughtered in 1939 totaled 200,431. In Table II, which follows, the estimated livestock population for 1935 is shown.

Table II.

Estimated Livestock Population for 1935.[1]

Class of Animals	Head	Class of Animals	Head
Cattle	913,128	Goats	373,204
Hogs	879,991	Horses	265,881
Sheep	34,829	Mules and asses	182,262

Minerals:

The mineral deposits of the Republic are of comparatively little importance. Small quantities of iron, nickel, copper and some other metals have been found, but as yet no great commercial importance has been attached to the mining industry. Gold has been found in sizeable quantities and in 1940 it ranked sixth as an export. The gold found is placer, and is obtained mainly by panning the stream beds. The United States imports most of the gold produced. Beds of rock salt, with associated gypsum and clay deposits, are worked in the southwestern provinces of Barahona and Azua to furnish domestic requirements, and there have been signs of petroleum in Azua. 1/

Manufactures:

Industrial establishments have been increasing steadily. In 1938 a partial estimate was made covering registered enterprises, placing the number of such plants at 1,705, representing an investment of 73,400,000 dollars and the employment of 34,194 persons. Since 1938 there have been further expansions in this field. Since sugar cane is the most important crop, the primary industry is sugar production. The mills are located in and about San Pedro de Macoris.

There are many other industries of a lesser nature, these being pottery and starch factories, lumber mills, spring and mattress factories, numerous cigar and cigarette plants, chocolate producers, distilleries, soap and match factories, furniture shops, dairies, tanneries and breweries. Although hides are an important item among Dominican exports, there are also many shoe factories which supply domestic requirements. Clothing is manufactured and there is a meat-packing plant in Ciudad Trujillo. All of the enterprises are small, being designed mainly to take care of the domestic market. 1/

Imports and Exports 1/

A matter of great importance to the Republic is its foreign trade. Exports during the ten years 1930-1939 averaged over 14,646,000 dollars. In 1940 they amounted to about 18,300,000 dollars. The most important of its exports are sugar, cocoa, and coffee, while minor exports include molasses, starch, gold, corn, bananas, cattle, tobacco, hides and skins, and lumber in the order of their importance. The value of imports for 1939 was about 11,592,000 dollars as compared to the 1929-1938 average of 11,855,000 dollars. The chief imports of the country are cotton and cotton goods, foodstuffs, structural material, machinery and apparatus, petroleum and its products, chemicals and pharmaceutical products, automobiles, paper and paper manufactures. Although England, the United States, and France, have long been the leading purchasers of the exports of the Republic, since the war, however, the United States is now practically the only country to import its products. In Table III which follows, imports and exports are shown for recent years, by value, in United States dollars.

Table III.

Imports and Exports for recent years
by value in U.S. dollars 1/

Year	Imports	Exports	Year	Imports	Exports
1929	22,729,444	23,736,497	1936	9,926,567	15,149,908
1932	7,794,343	11,164,271	1937	11,691,896	18,120,471
1933	9,322,688	9,625,473	1938	11,342,495	14,347,033
1934	10,547,344	12,894,636	1939	11,592,166	18,643,302
1935	9,790,033	15,487,149	1940	---	18,330,135

Conclusion

The lack of an extensive railway system and navigable rivers creates a situation in which the Dominican Republic has had to rely almost exclusively upon its highway system to solve its problem of internal transportation. As a producer of surplus consumption goods, the Republic must use these transportation facilities to the fullest advantage to gather and assemble its commodities at ports for export. Conversely, they are also essential for the effective distribution of imported goods or materials manufactured in the industrial or urban centers.

The topography of the country makes the problem of the development of an adequate railway network prohibitive in cost as compared to a highway system. Experience with the existing small railways indicates that any extension of rail communications would be questionable in view of the almost ruinous competition afforded by present highway carriers.

Potentially, the existing highway system, consisting of three main arteries, (the Duarte, Mella, and Sanchez Highways) with their branches and innumerable feeder roads, provides the media by which, with relatively few additions, every productive section of the country can be reached. The chief immediate problem is to put these roads in condition to handle traffic efficiently. To accomplish this it will be necessary to undertake extensive projects of surfacing, widening and drainage. Since all of the materials are not available locally, such projects will require the importation of large quantities of surfacing material and road-building machinery. In the country's present financial condition, it is doubtful if such a project could be put into execution in the immediate future. If and when this program is carried out, the Republic will have a transportation system that will be adequate both for economic development and for military defense.

THE HIGHWAYS OF THE DOMINICAN REPUBLIC

Road Mileage by Construction Types:

Because of the lack of extensive railway facilities or navigable rivers, the Dominican Republic is largely dependent on its system of highways both for its transportation, and its further economic development.

The need for a well-developed system of highways was first given official recognition in 1908, when the President of the Republic initiated several specific road building projects. With his death in 1911 and the subsequent change in administration these projects came to a halt.

During the period when the United States Government undertook the direct supervision of the affairs of the Republic (1916 to 1924) the military government which was established on the island, put into operation and continued the road-building program begun by the President. Realizing the advantage to be gained by such a development, the Government of the Republic has continued to foster a program of developing a comprehensive network of highways.

At the present time the highway system of the country centers around three principal roads, the Carretera Duarte (Duarte Highway) the Carretera Sanchez, and the Carretera Mella. Branching from these three basic arteries is an ever-increasing number of secondary highways, prominent among which are the Carretera Luperon and the Carretera Trujillo. From this nucleus of primary and secondary roads is spread out a wide network of feeder roads which serve to connect the interior towns with the main highway system. Still other highways, roads or trails serve as feeder lines of communication to the railways or maritime ports.

The highways in operation during 1940 and 1941, with their mileage and a description of the type of construction are shown in Table IV.

Table IV.

The Highways of the Dominican Republic
Mileage and type of construction - 1940 and 1941.5/

	1940		1941	
Type	Kilometers	Miles	Kilometers	Miles
Unimproved earth and non-surfaced	1,490	926	1,490	926
Improved earth, sand, clay, gravel, etc.	1,373	853	1,437	893
Waterbound macadam	291	181	291	181
Macadam, surface treated and penetration	290	180	290	180
Bituminous concrete and asphalt	1*	1	1*	1
Cement, concrete, block-stone, wood, asphalt and brick	none	none	none	none
Total	3,445	2,141	3,509	2,181

* One Kilometer of concrete highway constructed for experimental purposes.

Recent reports indicate that 2,300 miles of road were in existence at the close of 1942. No breakdown as to mileage and type comparable to that shown in Table IV is available for 1942. On the basis of classification of highways as applied in the United States there are practically no first-class roads in the Dominican Republic. The best roads fall within the category of second-class roads, that is, they are well ballasted, well drained, and surfaced with either oil, or tar and gravel. The other roads are comparable to the third-class group, that is, they have some ballasting, crowning and drainage.

The highway system serves fairly well present commercial needs. The roads as a whole are in fairly good condition for truck transport, receiving repairs within the means of the Department of Public Works. Graveled and oiled roads have a tendency to ravel and pit badly during the rainy season. Landslides also block traffic in the mountainous sections during heavy rains. As a result of the rains, roads without sufficient drainage structures, are often flooded, causing the washing out of gravel edges and foundations. In consequence, extensive repairs are needed after each rainy season.

Some of the coastal areas of the country and the mountainous regions in the interior are not accessible to motor traffic. These areas are reached only by horseback over difficult trails.

Planning and Financing

Planning and financing of highways comes under the Bureau of Public Works (Direccion General de Obras Publicas). In 1942 the appropriations of the Bureau of Public Works amounted to $1,042,500. Of this amount $461,200, or approximately 44 percent, was allotted for the construction and maintenance of roads and bridges.

Public Works appropriations for the year 1943 amount to $1,114,142. Of this sum $499,650 or approximately 45 percent, was allotted for the construction and maintenance of roads and bridges. An increase of over $38,450 over the previous year is shown.

Expenditures for highways come out of the General Fund. The Fund is maintained by fees collected from gasoline and vehicle license taxes.

Materials and Equipment

The Dominican Republic relies upon imports for its supply of asphalt and cement. In 1940 imports of cement amounted to 18,586,303 kilograms valued at $183,279.00; of this total the United States supplied 16,097,004 kilograms, valued at $170,424.00. Of the 1941 imports amounting to 22,201,223 kilograms, valued at $268,147 the United States supplied 22,115,041 kilograms valued at $267,187. England supplied the remaining 86,182 kilograms, valued at $960.00.

The heavy equipment in current use is old and in constant need of repair. Stocks of spare parts are low and difficult to replace. In consequence repairs to road-building machinery are frequently delayed for long periods. Orders were placed by the Bureau of Public Works in the United States in 1942 for three tracklaying tractors, 2 bulldozers, 1 trailbuilder and 1 rooter (ripper), besides trucks, cars and other equipment necessary for the building and maintenance of highways. Some of this heavy machinery is urgently needed for use in the construction of the road from Barahona to the Haitian frontier by way of the southern part of Lake Enriquillo, a project in which the United States is interested.6/

Table V

Machinery and Equipment in the Dominican Republic as of the close of 1942.6/

Item	Description
1 Road Roller	8 T - 3 wheel
31 Light Rollers	
4 Rock Crushers	
1 Heavy Tractor	10 tons
3 Track-laying Tractors	5 tons
9 Track-laying Tractors	various sizes
1 Bulldozer	9 foot blade
1 Road Grader	#10

In addition to the heavy equipment listed above, there is also some miscellaneous equipment on hand consisting of the following: pumps, concrete mixers, air compressors, welding machines, and numerous small tools of all types.

MAIN HIGHWAYS 6/

The highways of the Dominican Republic spread out from the capital in three main arteries. These are the Duarte, the Mella and the Sanchez. The most important, the Duarte Highway, runs in a northeasterly direction through La Vega, Moca and Santiago at which three points it connects with the railway which runs north to Puerto Plata, the most important port on the Atlantic Ocean. From Santiago it extends through Villa Bison to Monte Cristi on the Northeast coast 183 miles from the capital; the Mella Highway runs east from the capital to San Pedro de Macoris, an important port, thence northward to Hato Mayor and eastward to Seybo and Higuey its eastern terminus which is 106 miles from Ciudad Trujillo. Important branches terminate at La Romana and San Rafael de Yuma; the third main highway, the Sanchez, runs northeastward through the towns of San Cristobal, Azua and San Juan to Elias Pina 162 miles from the capital. Northward from Elias Pina there is an important road under construction which, when completed, will connect with the terminus of the Duarte Highway at Monte Cristi. There is another important branch which leaves the main highway just west of Azua and follows roughly the coast line of the Caribbean Sea and ends at the town of Pedernales at the southern boundary between the Republic and Haiti.

In the following table are shown the three main routes with their length in both kilometers and miles:

Table VI

Main Highways of the Dominican Republic6/

Name of highway	Length Kilometers	Miles
Duarte	295	183
Mella	171	106
Sanchez	261	162

Duarte Highway

The Duarte Highway extends from the capital diagonally to the northwest corner of the country and ends at Monte Cristi. It crosses the Cibao valley which is the chief agricultural area of the country. The highway is well ballasted and surfaced for the first 120 miles with an oil or tar crowning and is thereafter graveled. Its width varies from 20 to 33 feet. The first 120 miles of the road is well drained by the type of construction, and by ample culverts and bridges. The more westerly sections are less well graded and in very wet weather have standing water or over-flow which cannot be handled by the culverts. Maintenance of the road is fair.

The Duarte Highway is the base of the largest regional network of highways in the country. The more important improved roads are: the Luperon Highway, and a triangular road connecting Santiago, San Francisco de Macoris, and Rincon. These are branches of the Duarte Highway. As shown in Table VI it has a total length of 183 miles not including a large number of roads of access. Its principal use is in the transportation of agricultural commodities.

Mella Highway

The Mella Highway is well ballasted and fairly well maintained. It is provided with an oiled or tarred surface for the first 60 miles and is graveled for the remainder of the route. The width of the highway is from 18 to 33 feet. East of Seibo it is largely third-class in type. In general, the road traverses level and lightly rolling country. Most of this area is devoted to the cultivation of sugar cane. The section of the highway from Hato Mayor through Seibo to Higuey is located just outside the principal sugar district in an area devoted to grazing, stock farms, and miscellaneous agricultural production. It is a rich and well watered area, drained by several rivers.

A number of rivers and streams on this road and its main branches are crossed by bridges and culverts. There are no fords. Structural drainage is well handled, but after very heavy rains a number of the level stretches have standing or running water which damages the road surface and adds to the cost of maintenance. Motor transportation, however, is not impeded on the highway because of this condition.

The road is in fairly good condition as far as San Pedro de Macoris, and fair to poor from that point north and east. Its maintenance is somewhat inferio to that of the other highways running north and west from the capital.

There are a number of branch roads running from the Mella Highway, in fairly good condition, and which serve a large section of the surrounding country. The chief use of these branches is in the transportation of agricultural products. The total length of the Mella Highway is 106 miles, not including branch roads.

Sanchez Highway

The Sanchez Highway is fairly well maintained, connecting Ciudad Trujillo and the border town of Milla Elias Pina. The highway has an oil or tar surface for the first 100 miles from the capital, and is graveled thereafter. The width of the highway varies from 20 to 30 feet. Rivers and streams are carried under the road and its principal branches by means of bridges, culverts, and in a few cases fords are utilized for crossing. After exceptionally heavy rains, level stretches of road near the capital, San Cristobal, Bani and Barahona have water standing on them or running across them in torrents with depths varying from 6 to 18 inches.

As in the case of the Duarte and Mella Highways, the principal use of this road is in the movement of agricultural produce to markets, or ports for export.

The Sanchez Highway also has twelve branch roads which spread out in all directions and connect the various other sections of the surrounding country.

These branches more or less serve as feeder roads so that commodities which are grown off of the main artery can be transported to the highway and thence to destination. As a whole the branches are kept in fair condition, and vary from 15 to 22 feet in width. From a point one-half mile west of San Cristobal, running 6 miles north to La Toma is a fairly well maintained branch road which serves the property belonging to the President of the Republic. Estimated average width of this road is 18 feet. Another branch road with some sections passable only in fair weather, runs to Najayo and to Punta Palenque, 15 miles away on the Carribbean. The estimated average width is 15 feet.

Length

The total length of the highway, exclusive of branch roads, is 162 miles.

In Table VIII which follows is given the point to point mileage for the three main highways covered in this survey.6/

Table VII

Point to point mileage of the Duarte, Mella and Sanchez Highways.6/

Duarte Highway	Miles	Kilometers
Ciudad Truijillo	0	0
Los Alcarrizos	10	16
Villa Altagracia	28	44
La Cumbre	41	66
Monsenor Novel (Bonao)	56	90
Rincon (merely a road junction)	69	111
San Francisco de Macoris (branch)	86	140
La Vega	83	132
Moca	95	152
Santiago	109	175
Puerto Plata (branch)	147	236
Villa Bisono	125	200
Esperanza	138	220
Guayubin	165	264
Monte Cristi	183	292
Dajabon (branch)	204	326
Restauracion (branch)	233	372
Mella Highway		
Ciudad Trujillo	0	0
San Pedro de Macoris	48	75
Hato Mayor	64	102
Sabana de la Mar (branch)	92	147
Seibo	79	127
La Romana (branch)	109	175
Higuey	106	170
Yuma (branch)	122	195
Sanchez Highway		
Ciudad Trujillo	0	0
San Cristobal	19	30
Bani	41	66
Azua	76	121
Barahona (on branch)	124	198
San Juan de la Maguana	128	204
Las Matas	148	237
Elias Pina	161	258

Bridges

Due to the topography of the country a large number of bridges are necessary to span the rivers. These bridges are of all types and lengths. The following table lists the bridges of the individual highways and shows the type of construction, length, width, distance from Ciudad Trujillo and the load-carrying capacity.6/

Table VIII

Bridges on the Duarte, Mella and Sanchez Highways.6/

Type of Construction	Length (in feet)	Width (in feet)	Distance from Ciudad Trujillo (in kilometers and miles)		Capacity (in tons)
			Kilometers	Miles	
Duarte					
Concrete	23	21	18	11	12
"	100	16	19	12	12
"	12	24	29	18	12
"	36	22	30	19	12
"	38	20	38	23	12
"	49	24	39	24	12
"	40	22	41	25	12
"	26	24	44	27	12
"					
Villa Altagracia					
"	79	16	47	29	12
"	162	16	50	31	12
"	49	16	58	36	15
"	80	16	61	38	12
"					
La Cumbre					
"	187	16	74	46	12
"	105	16	78	48	12
"	20	16	79	49	12
"	172	16	80	50	12
"	80	16	82	51	12
"	80	16	86	53	12
Monsenor Nouel					
Steel	450	18	92	57	15
(Generalissimo Trujillo bridge over Yuma River)					
Concrete	79	16	103	64	12
"	18	19	105	65	12
"	189	16	106	66	12
"	45	19	107	67	12
"	23	19	107	67	12
"					
Rincon					
"	32	15	115	71	12
"	16	19	117	73	12
"	45	16	118	74	12
"	11	19	119	75	12
"	23	16	120	76	12
"	23	15	121	77	12
"	50	22	125	78	12

Table VIII (Continued)

Type of Construction:	Length (in feet)	Width (in feet)	Distance from Ciudad Trujillo: (in kilometers and miles)		Capacity (in tons)
			Kilometers	Miles	
			La Vega		
Steel	171	15	132	82	15
Concrete	41	23	134	83	12
Steel	120	15	141	88	10
Steel	186	15	145	90	10
			Moca		
Steel	74	19	153	95	10
Concrete	24	16	159	99	12
"	142	16	161	100	12
"	138	16	169	105	12
"					
			Santiago		
"	51	20	176	109	12
"	58	14	177	110	12
"	165	16	183	114	12
"	19	18	191	119	12
"	140	16	193	120	12
"	10	17	185	115	12
"	135	16	186	116	12
"	18	15	182	113	12
"	51	20	188	117	12
			Villa Bisono		
Concrete	140	16	201	125	12
"	10	16	210	130	12
"	10	16	212	132	12
Wood	77	16	213	133	8
Concrete	10	16	213	133	12
"	12	16	215	134	12
"	8	16	216	135	12
Wood	31	16	219	136	8
Concrete	10	16	219	136	12
"	8	16	219	136	12
Wood	30	16	219	136	8
Concrete	12	16	219	136	12

Table VIII (Continued)

Type of Construction	Length (in feet)	Width (in feet)	Distance from Ciudad Trujillo (in kilometers and miles)		Capacity (in tons)
			Kilometers	Miles	
		Esperanza			
Concrete	12	16	220	137	12
"	8	16	220	137	12
Wood	29	9	221	137	8
Concrete	12	16	224	139	12
Wood	46	9	224	139	8
Concrete	12	16	226	140	12
Wood	60	9	226	140	8
"	30	9	226	140	8
"	45	9	227	141	8
"	28	16	228	142	8
"	15	16	228	142	8
"	15	16	228	142	8
"	17	26	228	142	8
Concrete	12	16	229	142.2	12
Wood	31	16	229	142.2	8
"	15	16	229	142.2	8
"	45	16	230	143	8
"	60	9	231	143.5	8
"	38	9	233	145	8
"	58	9	234	145.4	8
"	46	9	235	146	8
"	50	16	235	146	8
"	30	16	237	147	8
"	15	16	238	148	8
"	45	16	238	148	8
"	30	16	239	149	8
"	61	16	240	149.1	8
"	36	16	241	150	8
"	30	16	244	152	8
"	15	14	244	152	8
"	15	9	245	152.2	8
"	32	9	245	152.2	8
"	38	9	246	153	8
"	30	16	247	153.4	8
"	28	16	247	153.4	8
"	114	16	249	155	8
"	32	16	249	155	8
"	33	16	251	156	8
"	63	16	252	157	8
"	30	16	255	158	8
"	32	16	257	160	8
"	18	9	257	160	8
"	16	9	259	161	8
Concrete	46	16	261	162	12
"	8	16	262	163	12
Wood	17	9	262	163	8
Concrete	12	16	262	163	12
Wood	32	9	263	163.4	8

Table VIII (Continued)

Type of Construction	Length (in feet)	Width (in feet)	Distance from Ciudad Trujillo (in kilometers and miles)		Capacity (in tons)
			(Kilometers	Miles	
		Guayubin			
Wood	30	9	266	165	8
"	38	9	264	164	8
"	16	9	266	165	8
Concrete	10	16	266	165	12
"	10	16	267	166	12
Wood	16	16	268	167	8
Concrete	8	16	270	168	12
Wood	22	16	272	169	8
"	16	16	272	169	8
"	18	16	273	170	8
"	15	16	275	171	8
"	15	16	276	171.4	8
"	32	16	276	171.4	8
"	32	16	279	173	8
"	15	9	283	176	8
"	32	16	285	177	8
"	16	16	286	178	8
"	15	16	287	178.3	8
			Monte Cristi		
Branch Road - Luperon Highway - Santiago to Puerto Plata					
Concrete	48	20	175	109	15
Wood	60	10	182	113	8
"	49	10	189	117	8
			La Cumbre		
Wood	80	9	200	124	8
"	80	9	209	130	8
Concrete	155	18	210	130.4	12
Wood	260	9	222	138	8
"	100	9	224	139	8
Concrete	20	18	234	145	12
"	20	18	234	145	12
"	20	18	235	146	12
			Puerto Plata		
Branch Road - Rincon - San Francisco de Macoris - Salcedo-Moca-Rincon					
Wood	30	8	111	69	8
"	20	8	112	70	8
"	70	8	117	73	8
"	60	8	117	73	8

Table VIII (Continued)

Type of Construction	Length (in feet)	Width (in feet)	Distance from Ciudad Trujillo: (in kilometers and miles) Kilometers	Miles	Capacity (in tons)
			Puerto Plata (Continued)		
Steel	204	18	118	73.3	15
Wood	60	8	120	75	8
"	20	8	120	75	8
"	60	8	121	75.1	8
"	20	8	121	75.1	8
"	40	8	123	76	8
"	80	9	124	77	8
"	60	9	126	78	8
"	30	9	127	79	8
"	60	9	130	81	8
"	160	9	131	81.3	8
			San Francisco de Macoris		
Wood	150	9	138	86	8
Wood-concrete	20	12	142	88	8
Concrete	20	12	149	93	12
"	20	12	151	94	8
"	12	12	151	94	8
Wood	50	9	153	95	8
"	40	9	154	96	8
Concrete	40	16	155	96.3	12
Wood	39	9	157	98	8
"	52	9	159	99	8
			Salcedo		
Wood	16	9	160	99.4	8
"	20	9	160	99.4	8
Concrete	22	18	162	101	12
"	20	12	165	103	8
Wood	18	9	168	104	8
"	30	10	170	106	8
Mella Highway					
Steel	736	25	1	1	10
(Ulises Heaureaux Bridge over Ozama River)					
Concrete	17	16	17.	11	12
"	45	19	31	19	16
Steel	927	20	65	40	15
(Ramfis Bridge over Higuamo or Macoris River)					

Table VIII (Continued)

Type of Construction	Length (in feet)	Width (in feet)	Distance from Ciudad Trujillo (in kilometers and miles)		Capacity (in tons)
			Kilometers	~~Kilos~~ Miles	~~Miles~~
		San Pedro de Macoris			
Concrete	96	16	85	53	12
"	26	16	101	63	12
"	33	16	102	63.3	12
		Hato Mayor			
Concrete	19	16	105	65	12
"	19	16	107	66	12
"	76	16	107	66	12
"	23	16	109	68	12
"	92	16	111	69	12
"	19	16	112	70	12
"	20	16	114	71	12
"	95	16	115	71.4	12
"	70	16	119	74	12
"	30	16	122	76	12
		Seibo			
Steel	400	18	127	79	15
(Eugenio Miches Bridge over Soco River)					
Concrete	33	16	129	80	12
"	52	16	130	81	12
Steel	253	18	141	88	15
(Juan Sanchez Ramirez Bridge over Chavon River)					
Wood	20	16	150	93	8
"	40	16	151	94	8
Steel	233	18	159	99	15
(General Santana Bridge over Sanate River)					
Wood	20	16	162	100.6	8
		Higuey			
Branch Road - Guerra - Bayaguana - Monte Plata.					
Wood	58	9	---	---	8
Steel	72	16	---	---	10
Wood	38	8	---	---	8
"	40	8	---	---	8
"	12	8	---	---	8
"	12	8	---	---	8
"	12	8	---	---	8

Note: --- indicates distances not furnished with data.

Table VIII (Continued)

Type of Construction	Length (in feet)	Width (in feet)	Distance from Ciudad Trujillo (in kilometers and miles)		Capacity (in tons)
			Kilometers	Miles	
			Higuey (continued)		
Wood	18	8	---	---	8
"	10	8	---	---	8
Concrete-wood	100	8	---	---	8
Wood	12	8	---	---	8
"	12	8	---	---	8
Concrete-wood	100	8	---	---	8
Branch road - Hato Mayor - Sabana de la Mar					
Steel	44	12	---	---	10
Steel	44	12	---	---	10
Steel	80	12	---	---	10
Wood	60	8	---	---	8
"	60	8	---	---	8
"	61	8	---	---	8
"	20	8	---	---	8
"	124	8	---	---	8
"	41	8	---	---	8
"	20	8	---	---	8
"	41	8	---	---	8
"	20	8	---	---	8
"	30	8	---	---	8
Sanchez Highway					
Steel (Over Haina River)	398	25	14	9	10
Steel	58	18	19	12	10
"	58	18	27	17	10
Concrete	70	26	28	17.5	12
"	268	16(Nigua R.)	29	18	12
			San Cristobal		
Concrete	18	25	30	19	12
"	12	22	35	22	12
"	25	18	36	22.5	16
"	18	18	37	23	12
"	60	18	38	24	12
"	94	16	43	27	12
"	14	20	49	30	12

Note: --- indicates distance not furnished with data.

Table VIII (Continued)

Type of Construction	Length (in feet)	Width (in feet)	Distance from Ciudad Trujillo (in kilometers and miles)		Capacity (in tons)
			Kilometers	Miles	
San Cristobal					
Steel	733	18	50	31	15
(Lucas Diaz Bridge over Nizao River)					
Concrete	20	23	53	33	12
"	60	18	54	34	12
"	52	19	56	35	12
"	18	18	58	36	12
"	18	18	59	37	12
"	166	20	62	39	14
"	20	20	62	39	12
Steel	317	18	65	40	15
(Jose Trujillo Valdez Bridge over Bani River)					
Concrete	126	16	65	40	12
Bani					
Wood	63	10	67	42	8
Concrete	15	20	70	43	12
Wood	160	8.6	72	45	8
"	40	9	73	45	8
Concrete	40	20	77	48	12
"	80	20	77	48	12
Wood	33	13	78	48.4	8
"	37	10	78	48.4	8
"	18	10	81	50	8
"	38	10	82	51	8
"	74	9	85	53	8
Steel	1,172	18	86	53.4	15
(Julia Molina Bridge over Ocoa River)					
Wood	59.5	9	89	55	8
"	59.5	9	90	56	8
"	59	9	91	57	8
"	177	9	99	62	8
"	144	9	106	66	8
"	60	9	111	69	8
"	100	10	111	69	8
Azua					
Wood	49	10	123	76	8
"	158	9	125	78	8
Concrete	24	11	131	81	12
"	100	14	132	82	12
"	80	13	133	83	12

Table VIII (Continued)

Type of Construction	Length (in feet)	Width (in feet)	Distance from Ciudad Trujillo (in kilometers and miles)		Capacity (in tons)
			Kilometers	Miles	
			Azua (Continued)		
Wood	60	11	144	89	8
			Branch to Barahona		
Wood	74	9	145	90	8
"	94	8.5	147	91	8
"	100	9	149	93	8
"	172	11.5	160	99	8
"	20	10	161	100	8
"	120	9	168	104	8
"	83	10	170	106	8
"	177	8.5	171	106.2	8
Concrete	336	16	178	111	12
Wood	38	12	180	112	8
"	54	12	180	112	8
"	20	12	181.6	112.4	8
"	20	12	181.7	113	8
"	40	9.5	184	114	8
"	40	10	188	117	8
"	135	9.5	191	119	8
"	42	10	191	119	8
"	20	9.5	194	121	8
"	70	9.5	195	121.1	8
"	160	9.5	197	122	8
"	180	10	201	125	8
"	80	9.5	203	126	8
			San Juan de la Maguana		
Wood	405	9.5	204	127	8
"	295	9.5	205	127.3	8
"	155	9.5	209	130	8
"	20	9.5	222	138	8
"	55	9	225	140	8
"	20	10	226	140.4	8
"	17	9.5	227	141	8
"	80	9.5	228	142	8
"	92	10	230	143	8
"	176	9	230	143	8
"	104	9.5	232	144	8
"	54	9.5	232	144	8
"	20	9.5	233	145	8
"	160	9.5	234	145.4	8
"	81	9.5	234	145.4	8

Table VIII (Continued)

Tupe of Construction	Length (in feet)	Width (in feet)	Distance from Ciudad Trujillo (in kilometers and miles) Kilometers	Miles	Capacity (in tons)
			Las Matas		
Wood	254	9.5	237	147	8
"	80	9.5	238	148	8
"	20	9.5	240	149	8
"	78	9.5	240	149	8
"	59	9.5	240	149	8
"	73	9	242	150	8
"	343	10	246	153	8
"	120	10	247	153.4	8
"	60	9.5	248	154	8
"	40	9.5	249	155	8
"	140	10	250	155.3	8
"	140	10	253	157	8
"	58	11	254	158	8
"	180	10	258	160	8
			Villa Elias Pina		
"	91	10	258	160	8

It will be noted from the foregoing table that there is still a large percentage of wooden bridges on the highways of the country. Such bridges when in good condition have a uniform rated capacity of 8 tons, and recent reports indicate they are in good condition.

Culverts

Specific information is not available as to the number and location of culverts on the principal highways.

Registration of Motor Vehicles in the Dominican Republic

As the highways of the Dominican Republic form the basis of the country's transportation system the number of motor vehicles in operation, as shown by periodic registrations, is unusually high when consideration is given to such items as location, population and area.

Motor vehicle registrations in November, 1942, totaled 2,824, compared with 2,650 on January 1, 1941, 2,880 on January 1, 1937, and 3,561 on January 1, 1931. Further comparison of the data for the four periods is shown in the following table:

Table IX

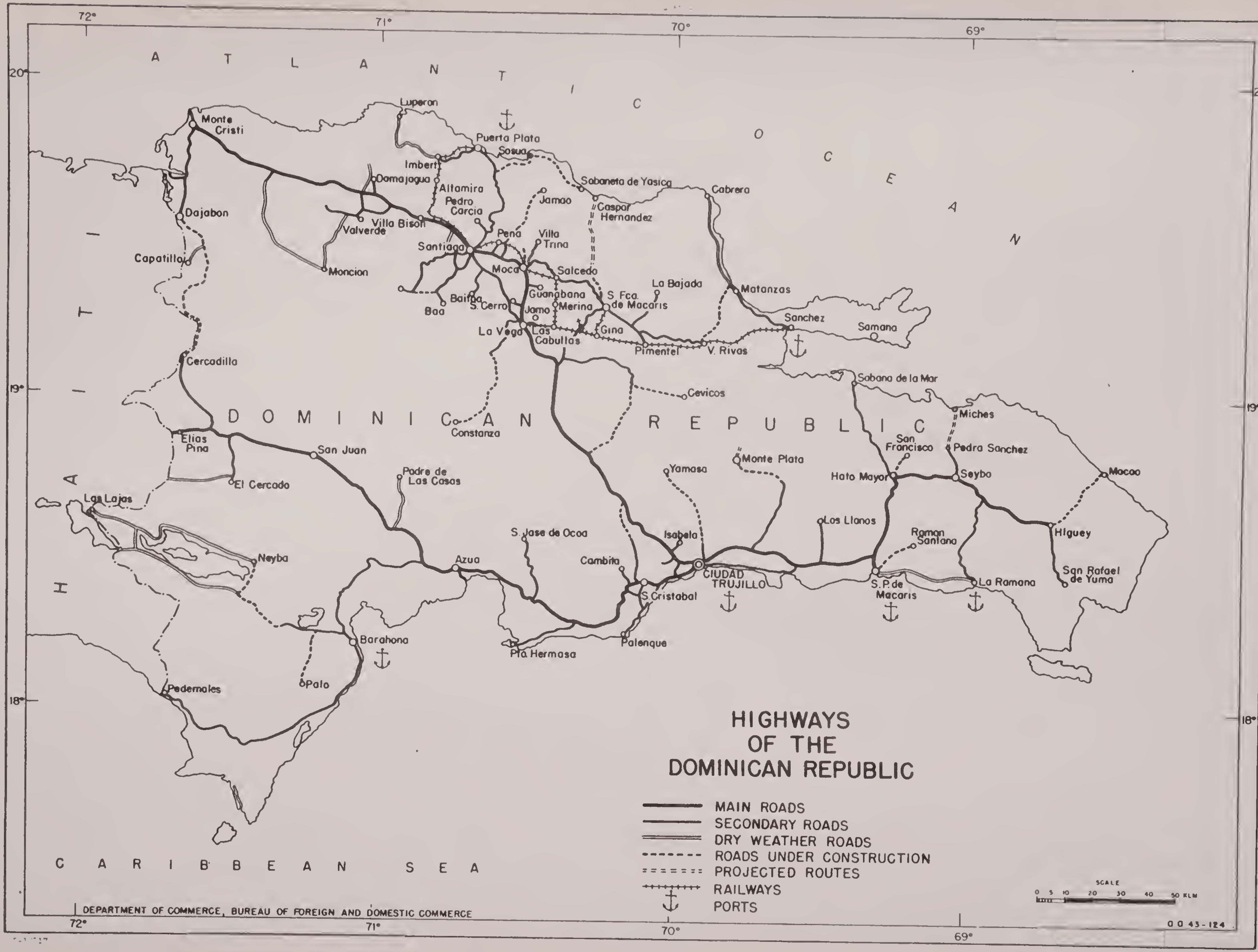
MOTOR VEHICLE REGISTRATIONS IN THE DOMINICAN REPUBLIC AS OF JANUARY 1, 1931, JANUARY 1, 1937, JANUARY 1, 1941 AND NOVEMBER 1942.

Year	Passenger Cars	Buses	Trucks	Total
1930 8/	2,810	---	751	3,561
1936*8/	2,000(private)	80(private)	800(private)	2,880
1940 7/	1,750	---	900	2,650
1942**8/	1,742	108	974	2,824

* Estimated
** Eleven months only

Of the total registrations for November, 1942, there were approximately 300 official vehicles of various types.

Transportation in the Republic is mostly by motor vehicles. Passenger cars and buses, in normal times, adequately cover the territory of the Republic. With the exception of the two short railways which have a total length of 152 miles, the entire surface transportation of the country is performed by highway transport. The agricultural products of the Cibao region come to the Capital by motor truck. Motor trucks are also used to some extent as rail feeders. Motor traffic, therefore, can be said to be the backbone of the Dominican territorial transportation. The northern part of the country as well as the south and east are reached from Ciudad Trujillo only by road. The railroads mentioned above serve only a limited area in the Cibao region.



HIGHWAYS OF THE DOMINICAN REPUBLIC

DEPARTMENT OF COMMERCE, BUREAU OF FOREIGN AND DOMESTIC COMMERCE

SOURCES

HIGHWAYS OF THE DOMINICAN REPUBLIC

1/ AMERICAN NATION SERIES #8:
Pan American Union, 1941.

2/ FILES OF AMERICAN REPUBLICS UNIT:
Bureau of Foreign and Domestic Commerce

3/ THE STATESMANS' YEAR BOOK, 1942.

4/ RAILWAYS OF CENTRAL AMERICA AND THE WEST INDIES;
By W. Rodney Long, 1925.

5/ HIGHWAY STATISTICS QUESTIONNAIRE FOR 1940 AND 1941.

6/ HIGHWAY STATISTICS, REPORT #3:
Prepared by Victor M. Medina, American Legation,
January 13, 1943.

7/ INDUSTRIAL REFERENCE SERVICE:
U. S. Department of Commerce, August 1941, Report #39.

8/ OFFICIAL SOURCES.

INDEX

HIGHWAYS OF THE DOMINICAN REPUBLIC

Page

A

AIR SERVICE 27
  Pan American 27

B

BRIDGES 37

C

Cities 26

Climate 28

Conclusion 34

Culverts 50

E

Equipment 36

Exports 33

F

Financing of Road Building and Repair 36

G

Geography 28

Government
  Executive 29
  Judicial 30
  Legislative 29

I

Imports 33

Industry
  Agriculture 31
  Cattle Raising 32

INDEX

Page

Industry, continued,
  Manufacturing 33
  Minerals 32

M

MAIN HIGHWAYS 37

  Duarte 38
  Mella 38
  Sanchez 39

Monetary Unit 26

Motor Vehicle Registrations 50

P

Planning of Road Construction and Repair 36

Population 30

Ports 26

R

RAILWAY FACILITIES 26
  Common Carriers

    CENTRAL DOMINICAN 26

    SAMANA - SANTIAGO 27

Industrial Railways 27

Road Mileage 34

Road Types 34

-0-

THE LIBRARY OF CONGRESS

THE LIBRARY OF CONGRESS

LIBRARY OF CONGRESS
0 027 794 425 A